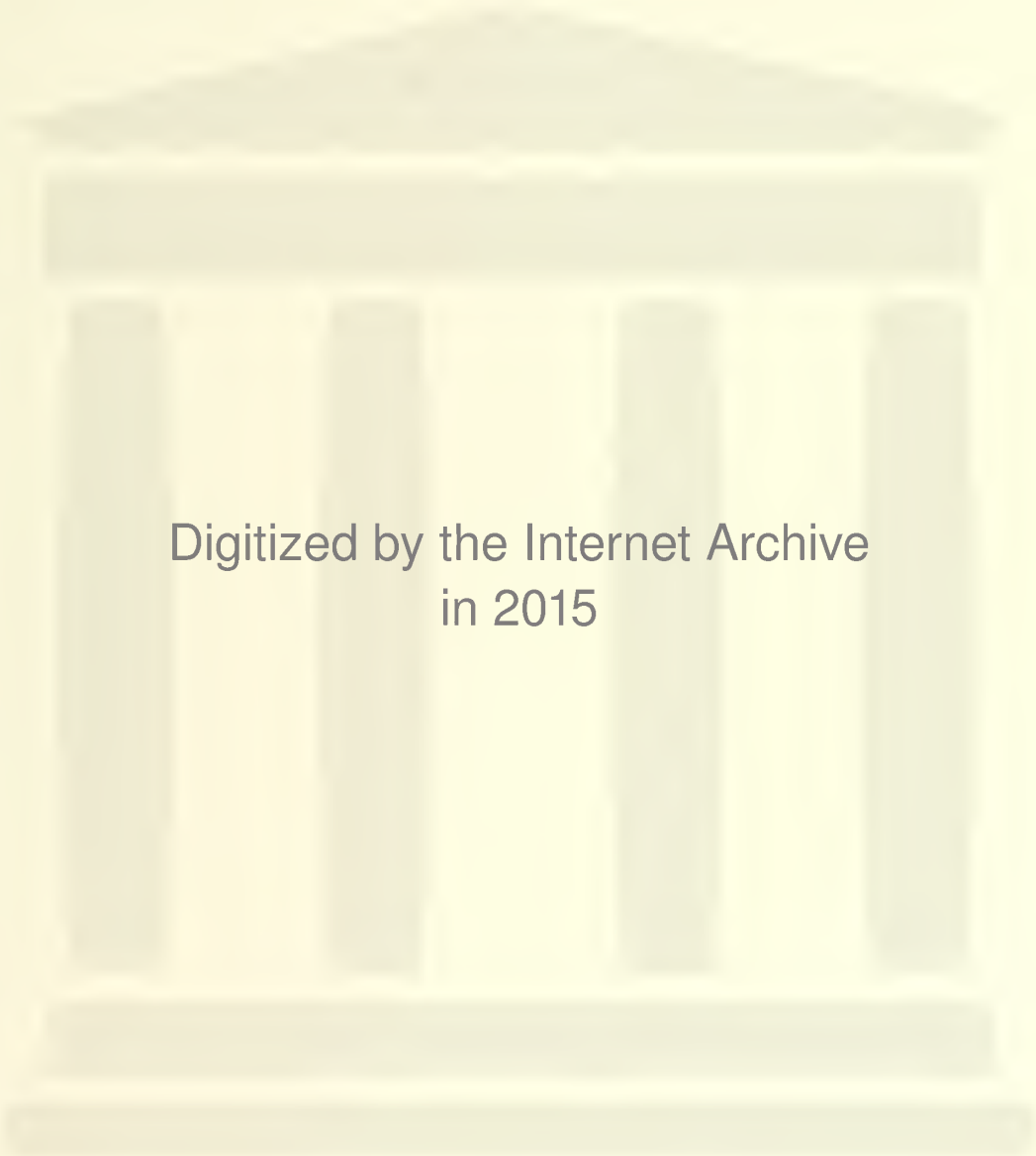
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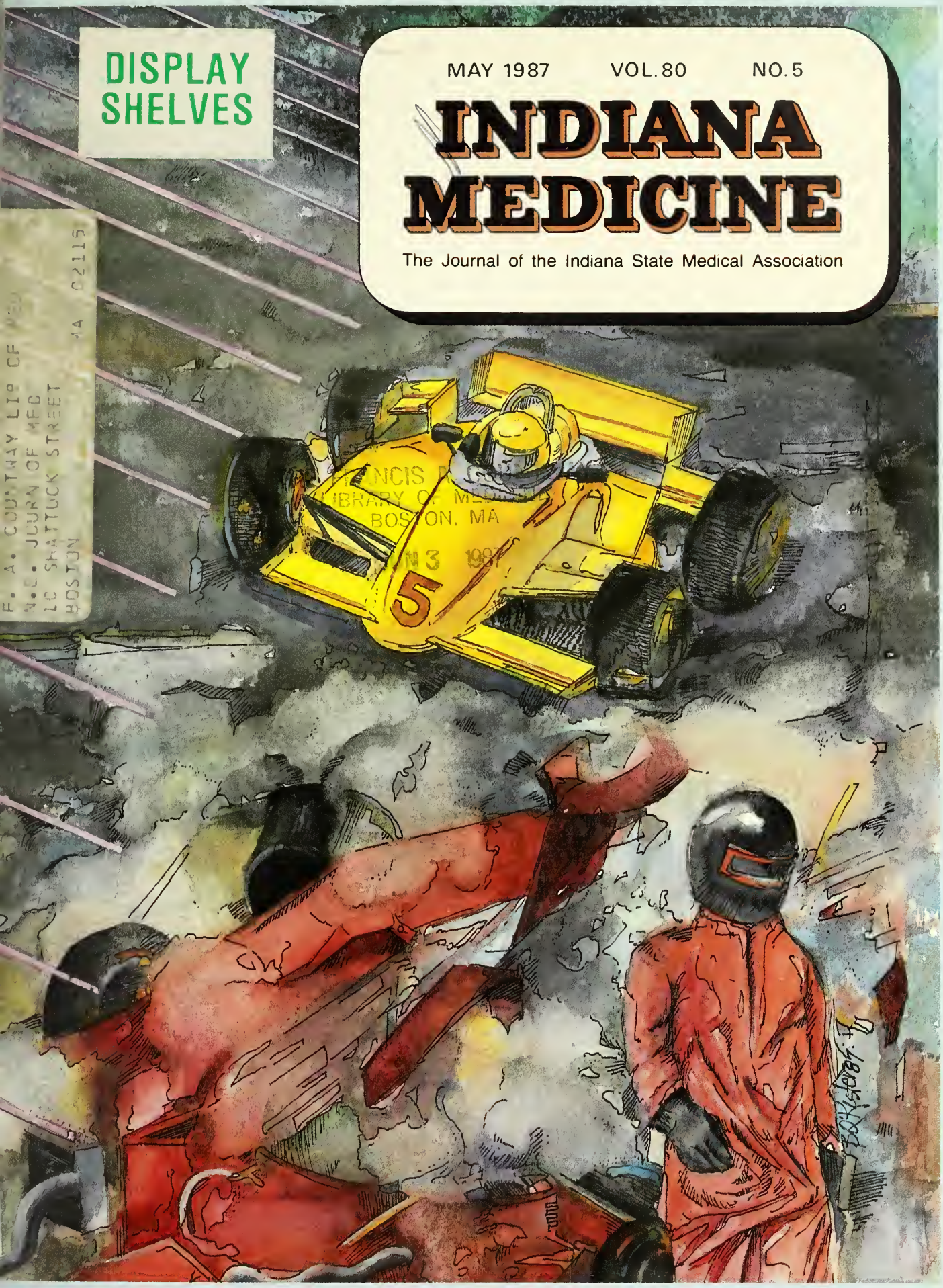
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MAY 1987

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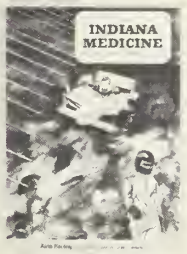
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ABOUT THE COVER

"When one considers the potential result of crashing a car at greater than 200 mph into a concrete barrier, the injury rate is surprisingly low," says Dr. Stephen E. Olvey, this month's Critical Care Medicine author. As the annual running of the Indianapolis 500 approaches, Dr. Olvey's report, "Auto Racing: Is There a Lesson To Be Learned?" is timely.—COVER BY BRENDA KESTER, MEDICAL MEDIA PRODUCTIONS, METHODIST HOSPITAL OF INDIANA

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MEDICAL MUSEUM NOTES

CHARLES A. BONSETT, M.D., Indianapolis

THE ACCOMPANYING illustration is the T. C. Steele portrait of Dr. William N. Wishard Sr. In 1879, Dr. Wishard, then 27 years old, was elected superintendent of the City Hospital in Indianapolis. This is the oldest hospital in the state to be used for the teaching of medicine (which means that most Indiana-trained physicians are at least familiar with the institution even though they may not have had a service assignment there during their training years). The name was later changed to Marion County General Hospital and, more recently, to Wishard Memorial Hospital, in honor of Dr. Wishard.

Dr. Wishard, who lived to be 89 years old, was a pioneer in the specialty of urology and was a teacher of medicine for more than half a century. He was often referred to as the "Grand Old Man of Indiana Medicine."

Dr. Wishard described his initial experience as a hospital superintendent during an address to the 1909 graduating class of nurses from the Indianapolis Protestant Deaconess Hospital:

"When I became superintendent . . . in July 1879, there were three nurses in the institution: one a male nurse who was in charge of all the male wards. The other two were women in charge of the medical, surgical and obstetrical patients in the female wards.

"The nurse in the male ward had been employed after recovering from an illness for which he had come to the hospital. He had had no previous training or experience and I was subsequently compelled to deprive the hospital of his valuable services because of an inclination on his part to use his personal endeavors to diminish the visible supply of the institution's alcohol. His success was so marked that he was frequently incapacitated for duty. . .

"The condition of the hospital building was deplorable. The light and ventilation was bad and the roof was old and leaky. Upon more than one occasion, I have seen snow upon the pillow near the patient's head that had been blown in through the warped casing. This was not an unmixed evil, as it afforded needed ventilation. . .

"Our cook was a venerable colored man weighing 250 pounds and bearing the euphonious name of Perry Valentine. I went into the kitchen one day when it was raining very hard and was amused to see the old gentleman going about his work of preparing the patient's meal with one hand while with the other he held a large umbrella over himself to ward off the dripping water from the leaking roof."



Dr. Wishard was in his 57th year when he gave this talk to the nurses. He was in his 77th year when he addressed the new interns of Methodist Hospital in Indianapolis on July 5, 1929, and gave them his list of Eighteen Don'ts:

First—Don't assume a hurried or brusque attitude toward the patient.

Second—Don't sit down by the bedside and say hurriedly, "Name, please. What is your address? What is the matter with you?"

Third—Don't fail to recognize the individual by a kindly attitude before you begin your questionnaire.

Fourth—Don't be in a hurry.

Fifth—Don't unnecessarily interrupt your patient in what may seem to be an endless story of aches and ailments, which, if carefully listened to may perhaps give you a clue to the pathology in the individual case.

Sixth—Don't make physical examinations of female patients at any time except in the presence of a nurse or an attending staff member.

Seventh—Don't offer opinions to your patient for, while you may be right, you may also be wrong and it is not your job.

Eighth—Don't forget that your task in making histories is to get an orderly statement according to the usual form, supplemented by such collateral facts as you may elicit by your examination.

Ninth—Don't let your patient lead you in the wrong direction as to his or her impression as to what is the matter but get the facts regardless of the patient's viewpoint, and turn them over to the attending staff member and confer with him and ask him questions and you will awaken an interest which will usually give a broader, clearer understanding of the case.

Tenth—Don't at any time let your attitude toward the attending staff member, the nurses or patients be other than strictly ethical and professional.

Eleventh—Don't telephone orders either day or night, when the nurse reports to you on a patient's condition and you think of something you regard as desirable for the case.

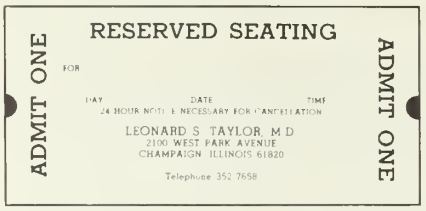
Twelfth—Don't fail to remember that in the absence of the attending staff member you are the individual who is responsible for what is to be done in any particular case and you cannot know without seeing and examining the patient.

Thirteenth—Don't fail to remember that some fatal results have occurred as the result of telephone orders. I have seen disastrous results follow when after an operation a patient has been suffering pain during the night

CONTINUED ON PAGE 446

WHAT'S NEW?

Colwell Systems has a new idea in appointment cards. Cards are printed like a large size reserve-seat ticket, with blanks for patient's name, day and hour, and the physician's name and address. RESERVED SEATING and ADMIT ONE appear on the ticket to call attention to the importance of the appointment and to increase the special events image—and the likelihood of meeting the appointment.



Advanced Technology Laboratories announces the IVT vaginal transducer, developed by ADR Ultrasound. It is a narrow, plastic-covered wand, which when inserted into the vagina, enables ultrasound scanning of the pelvic organs. High-resolution images make it possible to monitor ovulation timing and development of follicles and the sacs surrounding the eggs in the ovaries.

Physician-Hospital Joint Ventures is a book recently published by the AMA. It deals with cooperative business ventures between the physician and hospital, a new strategy for competing in changing times. It covers the new tax code, ethical considerations, relevant legal and business topics and generic and complex models of joint venture proposals. Order from the AMA at $10 for AMA members and $2.50 more for non-members.

Lippincott announces *Logan's Medical and Scientific Abbreviations.* It is a 673-page reference that lists more than 20,000 abbreviations, acronyms and symbols. Sells for $22.50. Medical and other scientific terms and expressions are covered.

News of what is new in the medical supply industry is composed of abstracts from news releases by book publishers and manufacturers of pharmaceuticals, clinical laboratory supplies, instruments and surgical appliances. Each item is published as news and does not necessarily constitute an endorsement of a product or recommendation for its use by INDIANA MEDICINE or by the Indiana State Medical Association.

Upjohn has an agreement with Sankyo of Japan granting Upjohn exclusive U.S. rights to market CS-807, an orally active cephalosporin antibiotic, for a limited period after the drug has been approved. Sankyo is developing the drug in Japan and will participate in U.S. development with Upjohn. Following the period of exclusivity, Sankyo U.S.A will co-market CS-807 in the U.S. with Upjohn.

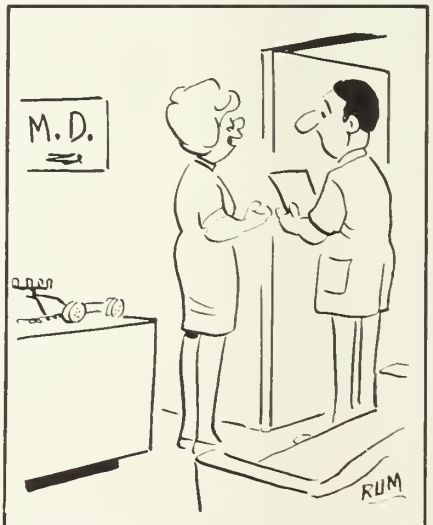
Bristol-Myers/Zimmer, in cooperation with the Orthopaedic Research and Education Foundation, have been active in the research on the non-cemented total hip arthroplasty. Prostheses are made which present a porous metallic surface that interfaces with the bone. This allows invasion of the prosthesis with blood vessels, the formation of callus and eventually bone to bind the prosthesis firmly. The process is especially suited for young patients, who will be more active later, and for obese patients, for whom the prosthesis supports more weight. The cementless device is the most recent addition to the more than 120 types of hip prostheses.

Parasites: A Guide to Laboratory Procedures and Identification is a 375-page book published by the American Society of Clinical Pathologists. It will help laboratory personnel detect virtually all common human parasites, worldwide, and identify diagnostic stages in feces, blood, body fluids and tissues. Increasing world travel exposes Americans to a great variety of parasites and increases the importance of early diagnosis of the rare forms. It is a companion volume to *Atlas of Human Parasitology*, also published by the ASCP Press. The Guide is $31.45 for members and $37.00 for non-members. The Atlas is $63.75 and $75.00.

Smith Kline & French announces the availability of "Tagamet" HC1 Injection in ADD-Vantage® vials. The combination is the result of the work of Abbott Laboratories, which manufactures the special flexible plastic "ADD-Vantage" I.V. container partially filled with diluent; this enables administration of intravenous medications more easily and efficiently and it reduces nursing time.

Medical Strategies, Inc. has developed a new computer application of the USP DI® data base. It is titled The Pharmacy Information Center/PIC™. It may be installed and used in pharmacies and in doctors' offices. It reproduces approximately 300 different USP DI leaflet abstractions that cover more than 95% of the medications prescribed for use on an ambulatory care basis.

Hewlett-Packard has a new transesophageal transducer that provides the capability for real-time assessment of cardiac function by ultrasound imaging during surgery without interrupting the surgical field. The procedure enables anesthesiologists to observe changes in myocardial function and ventricular volume consistent with myocardial ischemia, hemodynamic instability and presence of intracardiac air.



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FUTURE FILE

Indiana University CME

June 17-18: Pediatric Critical Care in Perspective, Sheraton Meridian, Indianapolis.

July 6-15: The Applied Anatomy and Histopathology of the Head and Neck and Temporal Bone, I.U. Medical Center, Indianapolis.

Aug. 5-7: Pan-American Sports Medical Congress XII, Indiana University, Bloomington.

Aug. 27-28: Thyroid and Parathyroid Disease, Lincoln Hotel and University Convention Center, Indianapolis.

(May courses are listed in the April issue of INDIANA MEDICINE, page 316.)

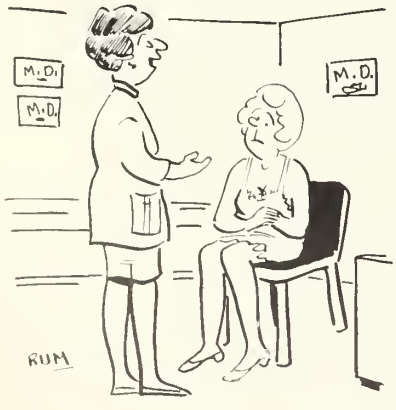
For more information on these and other CME programs, contact Melody Dian, Assistant Director, CME, I.U. School of Medicine—(317) 274-8353.

Critical Care

A Critical Care Symposium will be conducted at the Inn on the Park, Madison, Wisconsin, September 17 and 18.

It is designed for physicians, nurses and therapists. Credit for AMA Category 1 and AAFP. The program will feature workshops and review sessions for individual specialty needs.

The correspondent is Sarah Azlakson, 465B WARF Bldg., 610 Walnut St., Madison, Wisc. 53705—(608) 263-2856.



"If you'd like a second opinion—I have another computer."

The *Journal of the American Medical Association* publishes a list of CME courses for the United States twice yearly. The January listing features courses offered from March through August; the July listing features courses offered from September through February.

Clinical Cardiology

"Clinical Cardiology 1987: Current and Future Trends in Diagnosis and Therapy" is the title of a CME meeting December 27 to 30 at the Marriott World Center, Orlando, Florida. AMA Category 1 and AAFP credit. An update on current important clinical cardiovascular topics will be presented by national authorities.

The correspondent is Sarah Azlakson, 465B WARF Bldg., 610 Walnut St., Madison, Wisc. 53705—(608) 263-2856.

AMA Speakers Training

This year the AMA will again host the Health Report Conference featuring radio/TV report and Speakers Bureau training. The Seventh Annual Health Reporting Conference will be held June 4-7 in Palm Springs, Calif.

The conference is sponsored by Pfizer Laboratories and offers 21 Category 1 CME credit hours.

For more information, call collect (312) 645-5102.

Nutrition and Disease

"The Role of Nutrition in the Origins of Disease" will be the topic of the seventh annual Bristol-Myers Symposium on Nutrition Research, to be held Sept. 21-22 at the Fairmont Hotel in San Francisco.

Registration information can be obtained from Helen Shaw Miller, Program Coordinator, Office of Continuing Education, University of California, Davis, School of Medicine, 2701 Stockton Blvd., Sacramento, Calif. 95817—(916) 453-4390.

Allergies

"Allergy, Immunology and Rheumatology: Review and Update" is the title of a CME presentation October 9 and 10 at the University of Kansas Medical Center. Credit for AMA Category 1 and AAFP.

The correspondent is Eileen Buttron, U. of K. Medical Center, Office of CME, 39th and Rainbow Blvd., Kansas City, Kansas 66103—(913) 588-4480.

Impairment

The AMA National Conference on the Impaired Health Professional will be held October 8 to 11 at the Drake Hotel, Chicago. The major theme will be: "Impaired Health Professionals: Educating Ourselves, Educating Others."

For further information contact Janice J. Robertson, AMA Department of Substance Abuse, 535 N. Dearborn St., Chicago 60610—(312) 645-5083.

Orthopedics

"Orthopedics in Primary Care" is the title of a CME session September 25 and 26 at the Radisson Hotel, Madison, Wisconsin.

AMA and AAFP credits for nine hours. The course will review the diagnosis and management of common orthopedic maladies and injuries. Tickets for the Wisconsin vs. Ball State football game are available.

The correspondent is Sarah Azlakson, 465B WARF Bldg., 610 Walnut St., Madison, Wisc. 53705—(608) 263-2856.

Newborn Symposium

The 21st Annual Newborn Symposium will be conducted at the Kosair Children's Hospital Auditorium, Louisville, October 15 and 16. Larry N. Cook, M.D., will be the program director. Dr. Cook is Professor and Associate Chairman, Department of Pediatrics, University of Louisville.

AMA-HMSS Meeting

The AMA Hospital Medical Staff Section Ninth Assembly will be conducted June 18-22 at the Palmer House, Chicago.

For information contact the AMA at (312) 645-4747 or 645-4753.

Prison Health Care

The 11th National Conference on Correctional Health Care will meet in Chicago November 5 to 7. The National Commission has issued a call for papers for the meeting, to be held at the Palmer House.

For further information write or phone Jodie Manes at 2000 North Racine, Suite 3500, Chicago 60614—(312) 528-0818.

Cardiac Function

"Cardiac Function in Health and Disease Conference" will meet June 25-26 at the Sheraton World Hotel, Orlando, Fla. Eleven hours credit by the AMA and AAFP.

Contact: Rick Mace, Florida Heart Institute, 500 E. Rollins, Suite 101, Orlando, Fla. 32803—(305) 897-1575.

Hand Surgery

"The Scaphoid Fracture: The Riddle of the Wrist" is the title of the monthly Monday Night Hand Surgery Conference to be held at 7 p.m., May 18 at the Indiana Center for Surgery and Rehabilitation of the Hand, Indianapolis.

Dr. Peter R. Carter, associate clinical attending surgeon of orthopedic surgery at the University of Texas Health Science Center, will be the featured speaker.

These Monday Night Hand Surgery Conferences are presented each month as continuing education for hand fellows, orthopedic residents, hand therapists and others interested in surgery of the upper extremity.

For information on this and future conferences, call Beth Bush at (317) 875-9105.

Child Advocacy

"Child Advocacy as a New Role for Professionals" is the title of a conference to be conducted Sept. 10-12 at the Concourse Hotel, Madison, Wisc.

The course will be oriented to physicians, lawyers, health professionals and educators. It is accredited for 15 Category 1 hours. The fee for physicians is $250. The conference will address advocacy issues such as child abuse and neglect, joint custody, teenage pregnancy, and termination of parents' rights.

The correspondent is Ann Bailey, WARF Bldg., Room 456, 610 Walnut St., Madison, Wisc. 53705.

ACS Cancer Conference

The Second National Conference on Cancer Prevention and Detection will be conducted by the American Cancer Society on June 25 to 27 at the Westin Hotel in Seattle, Washington.

For full information write the Society at 90 Park Avenue, New York, N.Y. 10016.

Pets and Humans

"Health Benefits of Pets" is the subject of a Technology Assessment Workshop to be conducted September 10 and 11 at the National Institutes of Health in Bethesda, Maryland. The meeting is open to all physicians.

To register for the conference or to obtain additional information contact Ms. Sharon Feldman, Prospect Association, Suite 500, 1801 Rockville Plaza, Rockville, Md. 20852—(301) 468-6555.

Clinical Home Care

"The Second Conference on Clinical Home Care in the 1980s: Economics, Implementation and Ethical Issues" will be conducted June 25-26 at the Wisconsin Center, Madison. It is accredited for 13 Category 1 hours.

The correspondent is Sarah Aslakson, 465B WARF Bldg., 610 Walnut St., Madison, Wisc. 53705.

Critical Care

"Emerging Trends in Critical Care-1987" is the title of a CME conference at the Crowne Plaza Hotel in Orlando, Fla., Oct. 7-9. Fifteen hours CME credit will be awarded.

Write or call Rick Mace, Florida Heart Institute, 500 E. Rollins, Suite 101, Orlando, Fla. 32803—(305) 897-1575.

Organ Transplant

The International Organ Transplant Forum meets in Pittsburgh September 8 to 11. A comprehensive 4-day program featuring the world's leaders in transplantation will be presented.

For full information contact Ann Metzger, International Organ Transplantation Forum, DeSoto at O'Hara Streets, Pittsburgh, Pa. 15213.

Physician in Management

Seminar I and Seminar II on "The Physician in Management" is scheduled for June 22-26 at the Antlers Hotel, Colorado Springs, Colo. Each seminar is worth 31 CME credit hours.

The correspondent is Sherry Mason, American Academy of Medical Directors, 4830 W. Kennedy Blvd., Suite 648, Tampa, Fla. 33609—(813) 873-2000.



"Now here's a nice pattern— a double loop half stitch..."

CANCER CORNER

WILLIAM M. DUGAN, JR., M.D.
Methodist Hospital Cancer Care Center, Indianapolis

ORAL MORPHINE IN ADVANCED CANCER is a short booklet written by Robert Twycross, MA, DM, FRCP, and Sylvia Lack, MB, BS. It offers a wealth of practical guidance to the physician and nurse on the considerations that must be taken into account when initiating oral morphine therapy. It is written in question-and-answer form and is based on the questions most frequently asked during the authors' lectures and seminars on the subject. Detailed information is summarized in tables and checklists.

The booklet is free and can be obtained through a Roxane Laboratories representative.

AMERICAN COLLEGE OF SURGEONS PATIENT CARE EVALUATION (PCE) studies of malignant diseases nationwide are designed to describe the practice of medicine at the community level and to provide management and end results information. Studies have been conducted of: brain, breast, cervix (in situ), colon, endometrium, Hodgkin's disease, liver, lung, melanoma, prostate, rectum, soft tissue sarcoma and testis.

Participation by hospitals in these studies is voluntary. The primary data source is the hospital cancer registry. More than 500 hospitals in the United States and Puerto Rico routinely contribute data. To date, the data base includes more than 300,000 cases. Data from these studies have been used for professional education at hospital, state, and national levels. Results have been used extensively at scientific meetings, including the Cancer Symposium at the Clinical Congress of the American College of Surgeons. More than 50 articles have been published.

Hospitals' use of PCE data include: the ability to measure quality of care of patients with cancer; compare national trends with local management and survival; present at conferences as the current standard in cancer patient care; present at departmental conferences to evaluate care of patients with cancer; use in hospital quality assurance program; and the use in cancer educational programs for hospital staff and the community.

Usually two studies are conducted annually. The purpose of one of these studies is to examine established patterns of management related to diagnosis, treatment, and complications arising from initial diagnosis through completion of the first course of therapy.

The second study emphasizes patient follow-up focusing on recurrence, longevity, and quality of performance as related to histological type, stage of disease, patient age, and type of treatment at the time of initial definitive therapy. It covers the period from initial diagnosis and treatment to a defined period beyond the date of discharge from the hospital, usually five years. In addition to providing end results information, this study allows patterns of management to be compared with current data.

The studies are designed by the Committee on Patient Care and Research of the Commission on Cancer of the American College of Surgeons. A task force composed of committee members is appointed to design the study, analyze the results, prepare a manuscript, and publish the data. Task force members include physicians who specialize in the site under study, a representative from the National Tumor Registrars Association, and a statistical consultant. A staff representative from the Cancer Department of the College serves as liaison to the committee, task force statistician, and participating hospitals.

The preliminary study results are presented to and approved by the committee before any data are released. Reports are developed for participating hospitals that compare their experience with the aggregate data.

Interested hospitals are sent details about new studies. Hospitals participating in the studies automatically receive the national aggregate data to compare with their experience. Access to the data for nonparticipating hospitals is through manuscripts and published articles. Individuals and hospitals may obtain copies of the manuscripts only after they have been accepted for publication.

These studies may be used to meet the PCE requirements for approved hospital cancer programs. To fulfill the requirements, the hospital cancer committee must take an active role: approve the study format and criteria; identify significant variations from national patterns of care; analyze the cause of variations and, when appropriate, initiate actions to reduce or eliminate variations; evaluate the effectiveness of corrective actions.

National data on cancer are also available from the following sources: American Cancer Society, 90 Park Avenue, New York, N.Y. 10016 and the National Cancer Institute, 9000 Rockville Pike, Bethesda, Md. 20892.

A bibliography of published articles, copies of study formats and instructions, and copies of manuscripts are available. You can specify the site or sites of interest in your request and mail to: Cancer Department, American College of Surgeons, 55 East Erie, Chicago, Ill. 60611, or phone 312/664-4050, ext. 209.

NCI PUBLICATIONS LIST. The most updated listing of publications available to the public, patients and health professionals is now available through the National Cancer Institute. Publications, which are available free of charge, can be used as teaching aids and as information. Public and patient publication orders are limited to a maximum of 200 copies per title. Health professional publication orders are limited to three copies per title, unless otherwise restricted. For a complete listing of these publications write: Information Resources Branch, Office of Cancer Communications, National Cancer Institute, Bldg. 31, Room 10A30, Bethesda, Md. 20892.

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Please see next page for brief summary of prescribing information

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BRIEF SUMMARY *(FOR FULL PRESCRIBING INFORMATION SEE PACKAGE CIRCULAR.)*

INDERAL® LA brand of propranolol hydrochloride **(Long Acting Capsules)**

DESCRIPTION. INDERAL LA is formulated to provide a sustained release of propranolol hydrochloride. INDERAL LA is available as 60 mg, 80 mg, 120 mg, and 160 mg capsules.

CLINICAL PHARMACOLOGY. INDERAL is a nonselective, beta-adrenergic receptor-blocking agent possessing no other autonomic nervous system activity. It specifically competes with beta-adrenergic receptor-stimulating agents for available receptor sites. When access to beta-receptor sites is blocked by INDERAL, the chronotropic, inotropic, and vasodilator responses to beta-adrenergic stimulation are decreased proportionately.

INDERAL LA Capsules (60, 80, 120, and 160 mg) release propranolol HCl at a controlled and predictable rate. Peak blood levels following dosing with INDERAL LA occur at about 6 hours and the apparent plasma half-life is about 10 hours. When measured at steady state over a 24-hour period, the areas under the propranolol plasma concentration-time curve (AUCs) for the capsules are approximately 60% to 65% of the AUCs for a comparable divided daily dose of INDERAL Tablets. The lower AUCs for the capsules are due to greater hepatic metabolism of propranolol, resulting from the slower rate of absorption of propranolol. Over a twenty-four (24) hour period, blood levels are fairly constant for about twelve (12) hours then decline exponentially.

INDERAL LA should not be considered a simple mg-for-mg substitute for conventional propranolol and the blood levels achieved do not match (are lower than) those of two to four times daily dosing with the same dose. When changing to INDERAL LA from conventional propranolol, a possible need for retitration upwards should be considered especially to maintain effectiveness at the end of the dosing interval. In most clinical settings, however, such as hypertension or angina where there is little correlation between plasma levels and clinical effect, INDERAL LA has been therapeutically equivalent to the same mg dose of conventional INDERAL as assessed by 24-hour effects on blood pressure and on 24-hour exercise responses of heart rate, systolic pressure and rate pressure product. INDERAL LA can provide effective beta blockade for a 24-hour period.

INDICATIONS AND USAGE. Hypertension: INDERAL LA is indicated in the management of hypertension; it may be used alone or used in combination with other antihypertensive agents, particularly a thiazide diuretic. INDERAL LA is not indicated in the management of hypertensive emergencies.

Angina Pectoris Due to Coronary Atherosclerosis: INDERAL LA is indicated for the long-term management of patients with angina pectoris.

Migraine: INDERAL LA is indicated for the prophylaxis of common migraine headache. The efficacy of propranolol in the treatment of a migraine attack that has started has not been established and propranolol is not indicated for such use.

Hypertrophic Subaortic Stenosis: INDERAL LA is useful in the management of hypertrophic subaortic stenosis, especially for treatment of exertional or other stress-induced angina, palpitations, and syncope. INDERAL LA also improves exercise performance. The effectiveness of propranolol hydrochloride in this disease appears to be due to a reduction of the elevated outflow pressure gradient which is exacerbated by beta-receptor stimulation. Clinical improvement may be temporary.

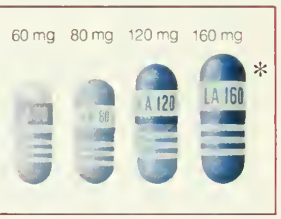
CONTRAINDICATIONS. INDERAL is contraindicated in 1) cardiogenic shock, 2) sinus bradycardia and greater than first-degree block, 3) bronchial asthma, 4) congestive heart failure (see WARNINGS) unless the failure is secondary to a tachyarrhythmia treatable with INDERAL.

ONCE-DAILY

INDERAL® LA

(PROPRANOLOL HCl)

LONG ACTING CAPSULES



WARNINGS. CARDIAC FAILURE. Sympathetic stimulation may be a vital component supporting circulatory function in patients with congestive heart failure, and its inhibition by beta blockade may precipitate more severe failure. Although beta blockers should be avoided in overt congestive heart failure, if necessary, they can be used with close follow-up in patients with a history of failure who are well compensated and are receiving digitalis and diuretics. Beta-adrenergic blocking agents do not abolish the inotropic action of digitalis on heart muscle.

IN PATIENTS WITHOUT A HISTORY OF HEART FAILURE, continued use of beta blockers can, in some cases, lead to cardiac failure. Therefore, at the first sign or symptom of heart failure, the patient should be digitalized and/or treated with diuretics, and the response observed closely, or INDERAL should be discontinued (gradually, if possible).

IN PATIENTS WITH ANGINA PECTORIS, there have been reports of exacerbation of angina and, in some cases, myocardial infarction, following *abrupt* discontinuance of INDERAL therapy. Therefore, when discontinuance of INDERAL is planned, the dosage should be gradually reduced over at least a few weeks, and the patient should be cautioned against interruption or cessation of therapy without the physician's advice. If INDERAL therapy is interrupted and exacerbation of angina occurs, it usually is advisable to reinstitute INDERAL therapy and take other measures appropriate for the management of unstable angina pectoris. Since coronary artery disease may be unrecognized, it may be prudent to follow the above advice in patients considered at risk of having occult atherosclerotic heart disease who are given propranolol for other indications.

Nonallergic Bronchospasm (eg, chronic bronchitis, emphysema) — PATIENTS WITH BRONCHOSPASTIC DISEASES SHOULD IN GENERAL NOT RECEIVE BETA BLOCKERS. INDERAL should be administered with caution since it may block bronchodilation produced by endogenous and exogenous catecholamine stimulation of beta receptors.

MAJOR SURGERY. The necessity or desirability of withdrawal of beta-blocking therapy prior to major surgery is controversial. It should be noted, however, that the impaired ability of the heart to respond to reflex adrenergic stimuli may augment the risks of general anesthesia and surgical procedures.

INDERAL (propranolol HCl), like other beta blockers, is a competitive inhibitor of beta-receptor agonists and its effects can be reversed by administration of such agents, eg, dobutamine or isoproterenol. However, such patients may be subject to protracted severe hypotension. Difficulty in starting and maintaining the heartbeat has also been reported with beta blockers.

DIABETES AND HYPOGLYCEMIA. Beta blockers should be used with caution in diabetic patients if a beta-blocking agent is required. Beta blockers may mask tachycardia occurring with hypoglycemia, but other manifestations such as dizziness and sweating may not be significantly affected. Following insulin-induced hypoglycemia, propranolol may cause a delay in the recovery of blood glucose to normal levels.

THYROTOXICOSIS. Beta blockade may mask certain clinical signs of hyperthyroidism. Therefore, abrupt withdrawal of propranolol may be followed by an exacerbation of symptoms of hyperthyroidism, including thyroid storm. Propranolol may change thyroid function tests, increasing T_4 and reverse T_3, and decreasing T_3.

IN PATIENTS WITH WOLFF-PARKINSON-WHITE SYNDROME, several cases have been reported in which, after propranolol, the tachycardia was replaced by a severe bradycardia requiring a demand pacemaker. In one case, this resulted after an initial dose of 5 mg propranolol.

PRECAUTIONS. GENERAL. Propranolol should be used with caution in patients with impaired hepatic or renal function. INDERAL (propranolol HCl) is not indicated for the treatment of hypertensive emergencies.

Beta-adrenoreceptor blockade can cause reduction of intraocular pressure. Patients should be told that INDERAL may interfere with the glaucoma screening test. Withdrawal may lead to return of increased intraocular pressure.

CLINICAL LABORATORY TESTS. Elevated blood urea levels in patients with severe renal disease, elevated serum transaminase, alkaline phosphatase, lactate dehydrogenase.

DRUG INTERACTIONS. Patients receiving catecholamine-depleting drugs such as reserpine should be closely observed if INDERAL is administered. The added catecholamine-blocking action may produce an excessive reduction of resting sympathetic nervous activity which may result in hypotension, marked bradycardia, vertigo, syncopal attacks, or orthostatic hypotension.

Caution should be exercised when patients receiving a beta blocker are administered a calcium-channel-blocking drug, especially intravenous verapamil, for both agents may depress myocardial contractility or atrioventricular conduction. On rare occasions, the concomitant intravenous use of a beta blocker and verapamil has resulted in serious adverse reactions, especially in patients with severe cardiomyopathy, congestive heart failure or recent myocardial infarction.

Aluminum hydroxide gel greatly reduces intestinal absorption of propranolol.

Ethanol slows the rate of absorption of propranolol.

Phenytoin, phenobarbitone, and *rifampin* accelerate propranolol clearance.

Chlorpromazine, when used concomitantly with propranolol, results in increased plasma levels of both drugs.

Antipyrine and *lidocaine* have reduced clearance when used concomitantly with propranolol.

Thyroxine may result in a lower than expected T_3 concentration when used concomitantly with propranolol.

Cimetidine decreases the hepatic metabolism of propranolol, delaying elimination and increasing blood levels.

Theophylline clearance is reduced when used concomitantly with propranolol.

CARCINOGENESIS, MUTAGENESIS, IMPAIRMENT OF FERTILITY. Long-term studies in animals have been conducted to evaluate toxic effects and carcinogenic potential. In 18-month studies in both rats and mice, employing doses up to 150 mg/kg/day, there was no evidence of significant drug-induced toxicity. There were no drug-related tumorigenic effects at any of the dosage levels. Reproductive studies in animals did not show any impairment of fertility that was attributable to the drug.

PREGNANCY. Pregnancy Category C. INDERAL has been shown to be embryotoxic in animal studies at doses about 10 times greater than the maximum recommended human dose. There are no adequate and well-controlled studies in pregnant women. INDERAL should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

NURSING MOTHERS. INDERAL is excreted in human milk. Caution should be exercised when INDERAL (propranolol HCl) is administered to a nursing woman.

PEDIATRIC USE. Safety and effectiveness in children have not been established.

ADVERSE REACTIONS. Most adverse effects have been mild and transient and have rarely required the withdrawal of therapy.

Cardiovascular. Bradycardia, congestive heart failure, intensification of AV block, hypotension, paresthesia of hands, thrombocytopenic purpura, arterial insufficiency usually of the Raynaud type.

Central Nervous System. Light-headedness, mental depression manifested by insomnia, lassitude, weakness, fatigue, reversible mental depression progressing to catatonia, visual disturbances, hallucinations, vivid dreams, an acute reversible syndrome characterized by disorientation for time and place, short-term memory loss, emotional lability, slightly clouded sensorium, and decreased performance on neuropsychometrics. For immediate formulations, fatigue, lethargy and vivid dreams appear dose related.

Gastrointestinal. Nausea, vomiting, epigastric distress, abdominal cramping, diarrhea, constipation, mesenteric arterial thrombosis, ischemic colitis.

Allergic. Pharyngitis and agranulocytosis, erythematous rash, fever combined with aching and sore throat, laryngospasm and respiratory distress.

Respiratory. Bronchospasm.

Hematologic. Agranulocytosis, nonthrombocytopenic purpura, thrombocytopenic purpura.

Auto-Immune. In extremely rare instances, systemic lupus erythematosus has been reported.

Miscellaneous. Alopecia, LE-like reactions, psoriasiform rashes, dry eyes, male impotence and Peyronie's disease have been reported rarely. Oculomucocutaneous reactions involving the skin, serous membranes and conjunctivae reported for a beta blocker (practolol) have not been associated with propranolol.

DOSAGE AND ADMINISTRATION. INDERAL LA provides propranolol hydrochloride in a sustained-release capsule for administration once daily. If patients are switched from INDERAL Tablets to INDERAL LA Capsules, care should be taken to assure that the desired therapeutic effect is maintained. INDERAL LA should not be considered a simple mg-for-mg substitute for INDERAL. INDERAL LA has different kinetics and produces lower blood levels. Retitration may be necessary, especially to maintain effectiveness at the end of the 24-hour dosing interval.

HYPERTENSION — *Dosage must be individualized.* The usual initial dosage is 80 mg INDERAL LA once daily, whether used alone or added to a diuretic. The dosage may be increased to 120 mg once daily or higher until adequate blood-pressure control is achieved. The usual maintenance dosage is 120 to 160 mg once daily. In some instances a dosage of 640 mg may be required. The time needed for full hypertensive response to a given dosage is variable and may range from a few days to several weeks.

ANGINA PECTORIS — *Dosage must be individualized.* Starting with 80 mg INDERAL LA once daily, dosage should be gradually increased at three- to seven-day intervals until optimal response is obtained. Although individual patients may respond at any dosage level, the average optimal dosage appears to be 160 mg once daily. In angina pectoris, the value and safety of dosage exceeding 320 mg per day have not been established.

If treatment is to be discontinued, reduce dosage gradually over a period of a few weeks (see WARNINGS).

MIGRAINE — *Dosage must be individualized.* The initial oral dose is 80 mg INDERAL LA once daily. The usual effective dose range is 160-240 mg once daily. The dosage may be increased gradually to achieve optimal migraine prophylaxis. If a satisfactory response is not obtained within four to six weeks after reaching the maximal dose, INDERAL LA therapy should be discontinued. It may be advisable to withdraw the drug gradually over a period of several weeks.

HYPERTROPHIC SUBAORTIC STENOSIS — 80-160 mg INDERAL LA once daily.

PEDIATRIC DOSAGE — At this time the data on the use of the drug in this age group are too limited to permit adequate directions for use.

*The appearance of these capsules is a registered trademark of Ayerst Laboratories.

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Practical Oxygen Therapy

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Indianapolis

SUPPLEMENTAL OXYGEN therapy has been a mainstay of respiratory medicine and respiratory care for the past 50 years. In patients suffering from respiratory insufficiency or respiratory failure, administration of supplemental oxygen is inevitably the first step in their management and usually the last major intervention to be removed as they improve.[1] Although the use of supplemental oxygen is a tool within the armamentarium of almost every medical practice, there are several aspects of its application that deserve discussion.

The scope of this article will be limited to a discussion of the two major categories of supplemental oxygen therapy used for long-term oxygen support. The categories have been designated high- and low-flow oxygen therapy.[2] These categories do not include such short-term or first-aid measures as rebreathing oxygen masks, oxygen-powered breathing devices, or bag-value mask units. In addition, they do not include the very long-term types of therapy such as mechanical ventilation systems.

High flow oxygen therapy usually is chosen when there is a need to precisely alter the patient's FiO_2 and to expect predictable responses in arterial oxygenation. The first characteristic of high-flow oxygen therapy is that a precise FiO_2 is administered to the patient. That precision is limited to the precision of the available oxygen analyzers. In the higher concentration ranges, $\pm 2\%$ is considered the typically acceptable range; in the lower, near-room air concentrations, $\pm 1\%$ is a typically acceptable range.[3]

Precision in the delivery of the FiO_2 is not sufficient to assure correlation between the FiO_2 delivered and the patient's pAO_2. Additional requirements are necessary. The first of these is a well fitted airway appliance. This usually is accomplished with a comfortable, but tightly fitted, "oxygen"-type

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mask applied carefully over the nose and mouth with as little opening around the edge as possible. If that mask is applied askew or the nose or mouth are not beneath the mask, then the patient has the ability to mix room air with the precisely measured FiO_2 to give an unknown $pA0_2$.[4] Selection of the mask style itself may have impact on the ability of the patient to entrain room air.

There are two commonly used oxygen masks in most hospitals. They are the "oxygen" and "mist" masks. The "mist" mask can be identified by the very large (usually 1½ to 2 cm) holes on either side of the nose projection. The "oxygen" mask, on the other hand, has a circle of very small (1 mm) holes in approximately the same location. The large holes of the "mist" mask may allow ready entrainment of room air and dilution of the FiO_2 to an unknown lower level. The small holes of the "oxygen" mask substantially limit the amount of air that can be entrained and provide only a source of egress for excess flow from beneath the mask.

The third characteristic required for proper high flow therapy is that characteristic from which its name is derived. A high bulk flow of the precisely mixed FiO_2 must be delivered beneath the well fitted appliance.[2] The purpose of the high flow is to assure that at no point during the patient's inspiration will he entrain room air by having a peak inspiratory flow rate substantially greater than the delivery rate beneath the mask. Although a patient's minute ventilation may be only 5 to 7 l per minute, his peak flows during that period may easily be 40 to 50 liters per minute. Therefore, 40 to 50 l per minute for an adult is typically the minimal requirement to assure that no room air will be entrained.

In the simplest systems the bulk flow is readily determined if the FiO_2 is administered via a series of air and oxygen flow meters. The total of the air and oxygen flow meters determines the bulk flow and the balances thereof determine the FiO_2. If an air/oxygen blender is used, the bulk flow can be metered with a large high-flow, flow meter from the blender. The FiO_2 is mixed within the blending unit. Such systems are not, however, the most common ones utilized for delivering high-flow oxygen therapy. The most common systems employ a venturi.

A venturi system operates on the principle that high velocity gas will have a negative lateral pressure and will entrain the surrounding gas and mix it in the stream.[4] By precisely adjusting the configuration and design of the nozzle for high velocity gas within a venturi and precisely controlling the access of the surrounding air through variable windows, a precise FiO_2 can be administered. The difficulty with these systems is that the bulk flow is not readily apparent. The only measured flow is the flow of pure oxygen delivered to the venturi jet. This seldom exceeds 15 l per minute. However, the effluent flow from the venturi will be considerably greater.

If a venturi is powered with 4 l per minute of oxygen and is adjusted to deliver a mixture enriched to 24% oxygen, the effluent or bulk flow will be 105 l per minute. If that concentration is increased to 30% with the same powering flow, the bulk flow diminishes considerably to 35 l per minute. If 50% oxygen is desired with 4 l powering flow, much less room air can be entrained and the bulk flow will be between 10 and 11 l per minute. For a constant powering flow into a venturi, the bulk flow effluent from the venturi is inversely proportional to the FiO_2 setting of the venturi. In its most extreme example, if 80% oxygen is desired from the venturi powered by 4 l per minute of oxygen, slightly over 5 l per minute of effluent flow will be exiting from the venturi. The following equation can be used for calculating the bulk flow with varying powering flows and varying FiO_2's.

$$\text{Bulk Flow} = \frac{79 \times \text{Powering Flow}}{O_2\%\text{'age} - 21}$$

The two most common venturi type systems used in high-flow oxygen therapy are the "venturi mask" and the "pneumatic aerosol" humidifier. "Venturi masks" usually are designed with an assortment of inserts for the desired FiO_2's. Those inserts are imprinted with the appropriate powering flows to deliver not only the labeled FiO_2, but an adequate bulk flow. Some manufacturers of "venturi masks" today include charts that suggest increasing the powering oxygen flow above the originally prescribed setting in order to increase the bulk flow to a satisfactory level. The "pneumatic aerosol" humidifiers have a somewhat more cryptic system for blending the air and oxygen.

The venturi is integral with the nebulizer head in these humidifiers. The FiO_2 is adjusted by turning a collar that varies the size of air entrainment windows; approximations of the FiO_2 are indicated with labels on the collar. In their usual clinical application, pneumatic aerosols are powered by approximately 12 l per minute of oxygen. This is the upper limit of oxygen flow that can be delivered through these aerosols with the typical 40-pounds-per-square-inch powering pressure available in most hospitals from wall oxygen. The oxygen flow is limited by the high resistance of the jet within the venturi. Opening the flow meter control knob further does not result in any additional increase in flow.

It then follows that as the FiO_2 is increased, holding the powering flow at the constant maximum of 12 l per minute, there will be an inverse change in the bulk flow effluent from the nebulizer. Unless this principle is clearly understood, it is quite possible to be administering higher and higher FiO_2's via a pneumatic aerosol, while at the same time delivering a smaller and smaller bulk flow. The result will be that a patient may be entraining room air around the mask, and his effective pAO_2 will actually be less as the FiO_2 control is increased.

In some institutions policies have been established to set upper limits for the FiO_2 that is allowed to be delivered via a single pneumatic aerosol. Typically, that upper limit lies between 30% and 50% oxygen. When that limit is reached, additional sources of flow must be added to the system to provide an adequate bulk flow to the patient. This can be achieved in several fashions.

Dual nebulizers may be connected together via a large Y-piece connector to deliver both of their bulk flows beneath the single patient mask. This technique provides sufficient bulk flow up to approximately .70 FiO_2. Should high-flow therapy be desired in a range greater than 70%, pure oxygen usually can be added to a lower FiO_2 setting in amounts sufficient to enrich the total mixture to the desired higher FiO_2.

In some pediatric environments, less attention is given to these high ranges of bulk flow. Very small children seldom require them, particularly when the blended gas is delivered beneath an O_2 hood. Some pediatric intensive care units incorporate oxygen/air blenders at a bedside. These are very convenient for mixing the air and oxygen to a precise FiO_2. It is a common practice in such units to attach the pneumatic aerosol to these blenders. The FiO_2 setting on the pneumatic aerosol is adjusted to 100% (no air mixing permitted) and the gas entering the aerosol is adjusted via the blender. This arrangement again is satisfactory for very small children, but can be a deceptive trap in the management of larger patients, particularly those with high minute ventilations.

From this discussion it should be evident that some attention by the clinician to the type of device that is being incorporated for the administration of high-flow oxygen therapy is necessary. It is quite possible to be led astray as to the patient's actual respiratory status by the insufficient bulk flow or inappropriate type of mask being applied to the patient.

The other major category of oxygen therapy is low-flow oxygen therapy.[2] In low-flow therapy only oxygen is supplied to the patient, usually via a nasal cannula or nasal prongs. The patient takes this low flow of pure oxygen and dilutes it in his own minute ventilation. This clearly produces considerable imprecision in the FiO_2. For a given oxygen flow, the FiO_2 varies inversely with the patient's minute ventilation.[4]

There are some approximate rules of thumb that can be used for converting from high-flow oxygen to low-flow therapy. It is necessary to assess the appropriateness of the new form of oxygen therapy by an arterial blood gas determination. The FiO_2 produced by low-flow therapy in a 70-kilogram normally metabolic, normally ventilating patient is approximately 4% supplementation for each liter per minute administered to the patient. The upper limit is approximately 6 l per minute. The degree of supplementation falls off asymptomatically above this level. In addition, the patient would most likely find greater than 6 liters per minute in his nasal cavity somewhat uncomfortable. Many patients do not tolerate it at all.

Given the degree of imprecision and the low upper limit of oxygen supplementation possible with flow therapy, one might reasonably question its value at all. However, it is quite valuable in long-term oxygen supplementation for those patients who have become extremely stable and do not display rapid changes in their cardiopulmonary status. In addition, for patients who are receiving deep breath therapy, or who need to eat while still receiving oxygen supplementation, it provides an adequate short-term supplementation.

Finally, for the long-term patient, low-flow therapy is extremely convenient. The oxygen source for low therapy may be quite portable and allow the patient to ambulate extensively, even on an outpatient basis. Low-flow oxygen therapy has become the cornerstone of long-term pulmonary rehabilitation in patients with chronic obstructive pulmonary disease and cor pulmonale.

An effective method for determining the appropriate low-flow oxygen therapy for such patients is to exercise them at an assortment of levels while measuring, either with an ear oximeter or with more invasive methods, the degree of saturation that may be maintained at various oxygen flows and exercise levels. These patients then can be discharged with a list of various categories of activity during which they should change their oxygen flow to a predetermined level.

It has been the goal of this discussion to demonstrate that while oxygen therapy is ubiquitous in almost all areas of medical management, it does incorporate certain subtleties that are not appreciated by all who employ it in their practice. These are simple concepts and an understanding of them can provide a more rational approach to administration of supplemental oxygen therapy.

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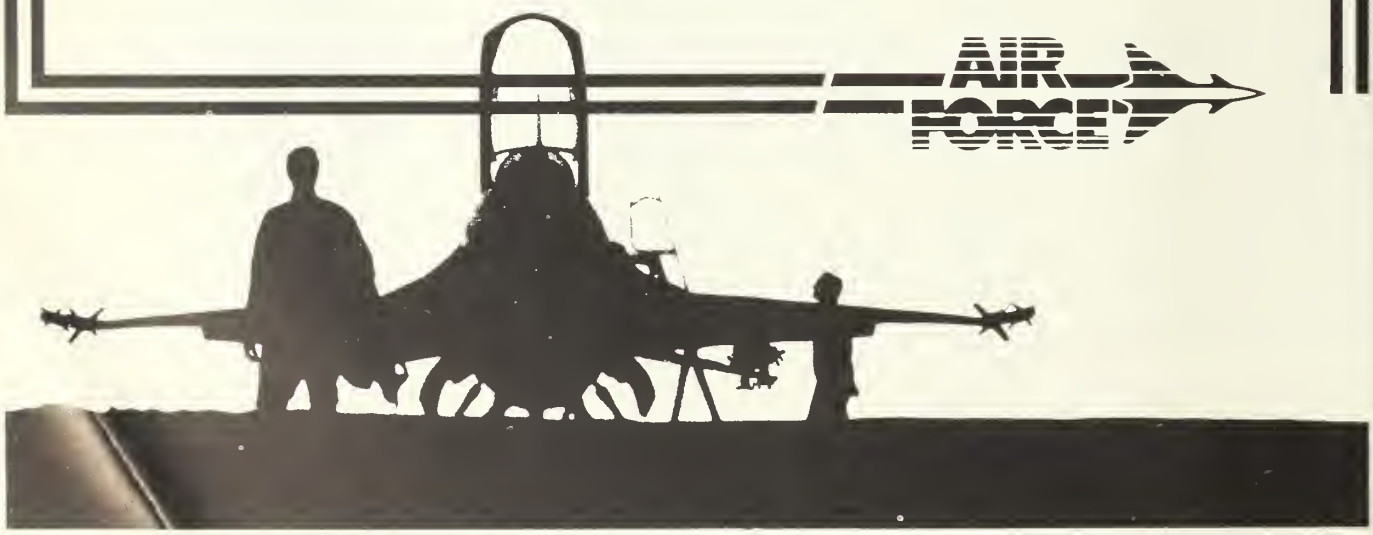
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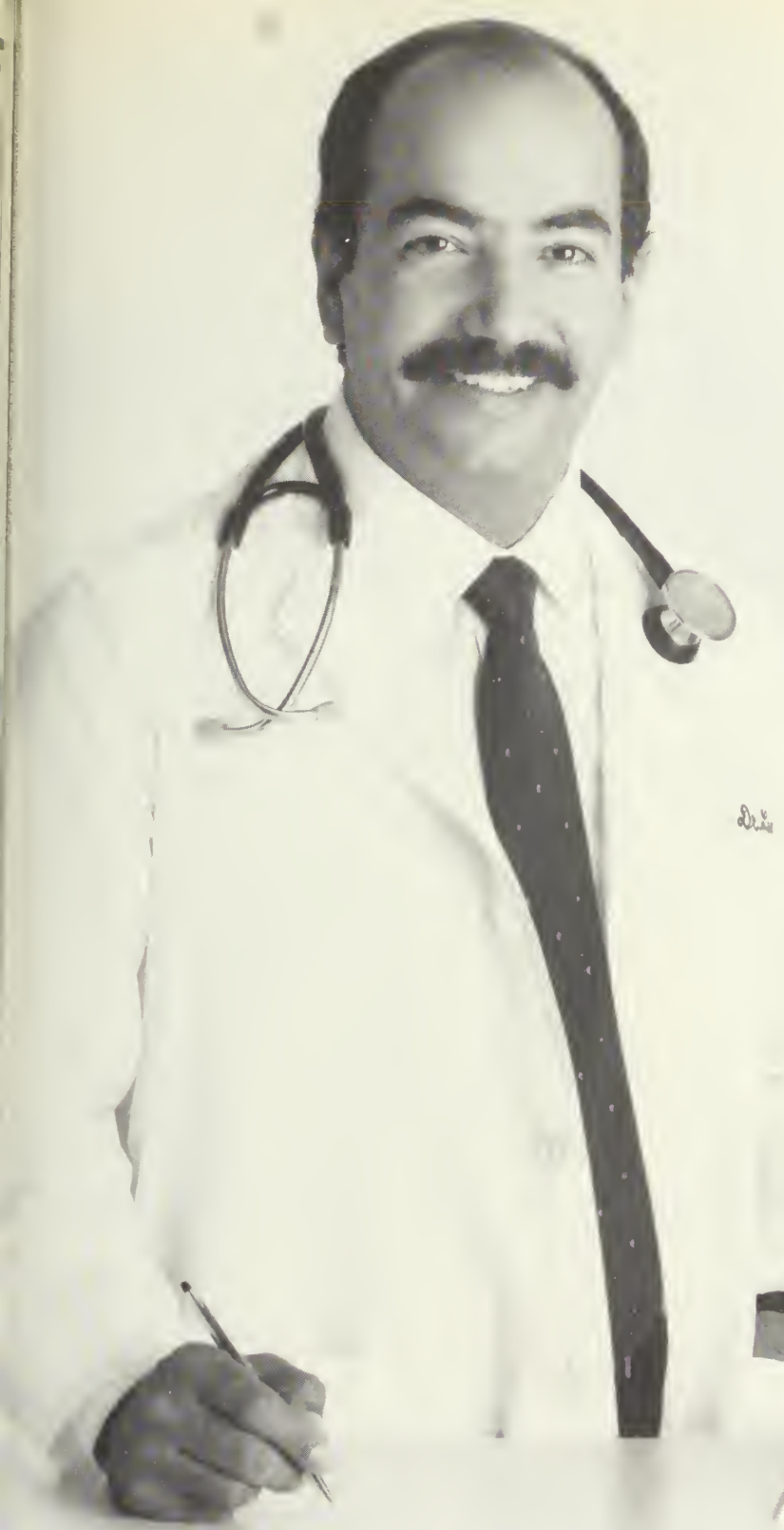
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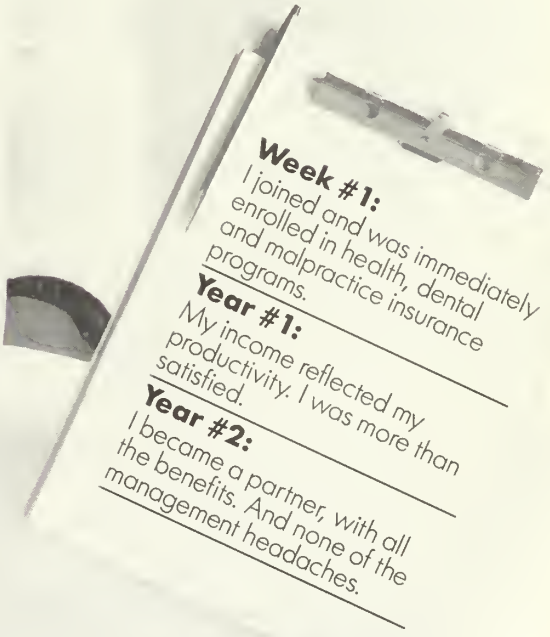
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The Evolving Role of Computed Tomography in Diverticulitis

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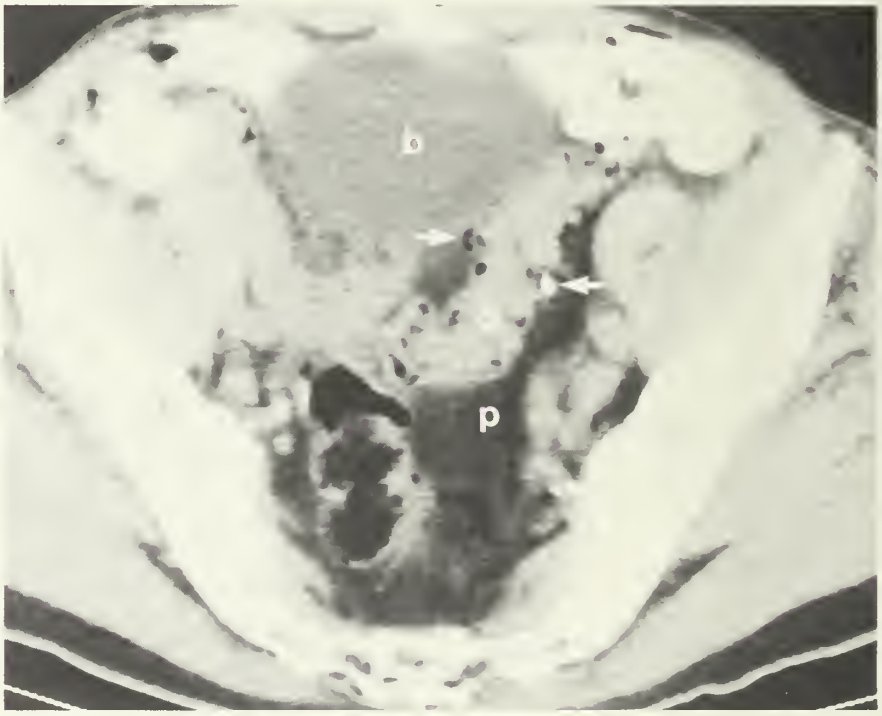


FIGURE 1: Diverticulosis. The sigmoid colon (S) is visualized behind and to the left of the bladder (b). Scattered diverticula (arrows) arise from the sigmoid colon. Note homogeneous low density of pericolic fat (p) behind the sigmoid colon.

DIVERTICULAR DISEASE of the colon, a common and distressing problem among elderly Americans, appears to be a disease of civilization. It affects about one-third of Americans over 60 years of age,[1] and accounts for more than 200,000 hospitalizations and more than 50,000 surgical procedures in the United States annually.[2]

Diverticulitis complicates diverticulosis in approximately 10-20% of cases. The severity of symptoms caused by diverticulitis is extremely variable. Patients typically complain of pain in the left lower quadrant, which is often accompanied by change in bowel habits and fever. In the more severe cases, abdominal pain is marked and there may even be evidence of peritonitis. Symptoms may be minimal in immunocompromised patients.[3]

Mild cases of suspected diverticulitis are usually treated medically without performing any imaging study for confirmation of the diagnosis. When symptoms are severe, or there is uncertainty about the diagnosis, barium enema or water-soluble contrast is traditionally used to establish the diagnosis. In recent years, computed tomography (CT) has been widely used for the diagnosis and treatment of intraabdominal abscesses in general and is now increasingly employed in the assessment of patients with complicated diverticulitis.[4-8] This brief report discusses and illustrates the evolving role of CT in the diagnosis and management of colonic diverticulitis.

Appearances on Computed Tomography

Diverticulitis may be limited to the diverticulum. The inflammation also may involve the wall of the colon adjacent to the diverticulum (peridiverticulitis). An inflamed diverticulum may rupture and produce inflammation and infection as a local or spreading peritonitis or as an abscess. Computed tomography directly visualizes peridiverticulitis or the complications resulting from rupture by visualizing changes in the pericolic fat. When

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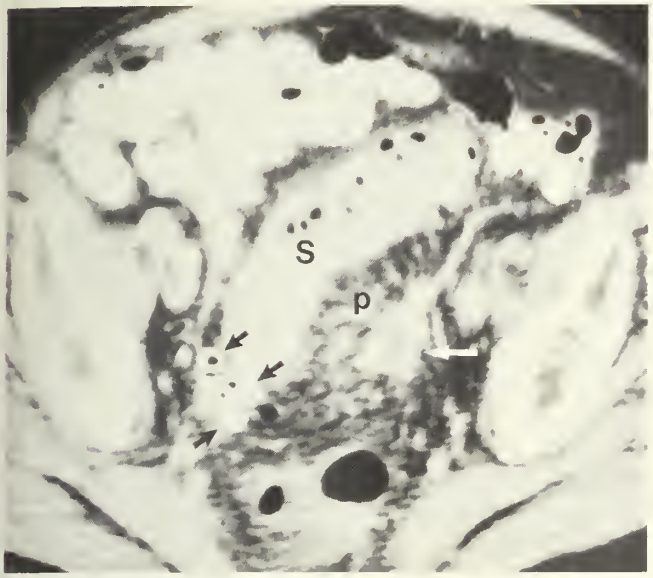


FIGURE 2-A: Diverticulitis. Relative mild changes. The sigmoid colon (S) contains several barium-filled diverticula (black arrows). The normally homogeneous pericolic fat (p) is largely replaced by numerous linear strands that terminate posteriorly in a small fluid collection (white arrow).

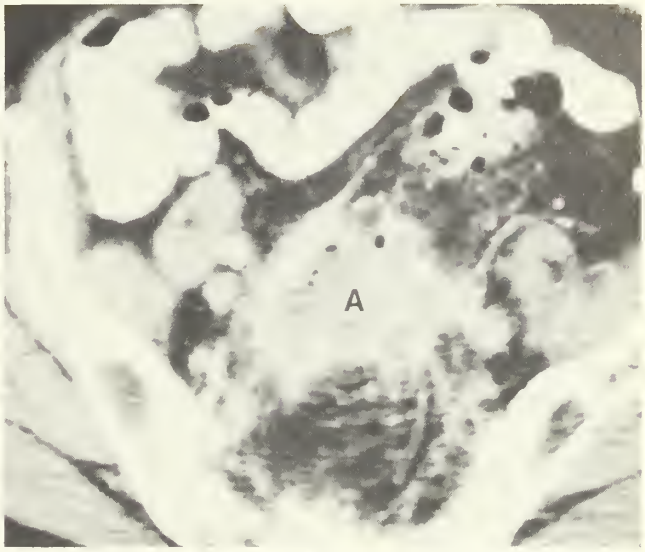


FIGURE 2-B: Diverticulitis. More severe changes. Two centimeters below level shown in Figure 2-A, a large multilocular abscess (A), composed predominantly of fluid but also containing several small gas bubbles, is present. This diverticular abscess was confirmed at surgery, at which time a sigmoid colectomy, colostomy and Hartman's pouch were performed.

diverticulosis uncomplicated by diverticulitis is present, the pericolic fat appears normal and CT shows only diverticula (*Fig. 1*) and sometimes thickening of the bowel wall secondary to muscular wall hypertrophy.

The appearances of complicated diverticulitis on CT depend on the severity of the disease process. Mild pericolic inflammation is characterized by poorly defined areas of increased density or fine linear strands (*Fig. 2-A*) in the fat adjacent to the involved colon. With more severe inflammation, the areas of increased density become better defined and focal fluid collections may be seen.[8] Larger fluid collections are usually due to abscess formation (*Fig. 2-B*). The abscesses frequently do not contain gas. Diverticular abscesses are most commonly pericolic (*Figs. 2-B and 3*), but may be located in sites remote from the colon such as the iliopsoas muscle, abdominal wall or liver. Because of this, CT scanning of the entire abdomen and pelvis is advisable.[9]

Other findings may be demonstrated by CT in patients with diverticular

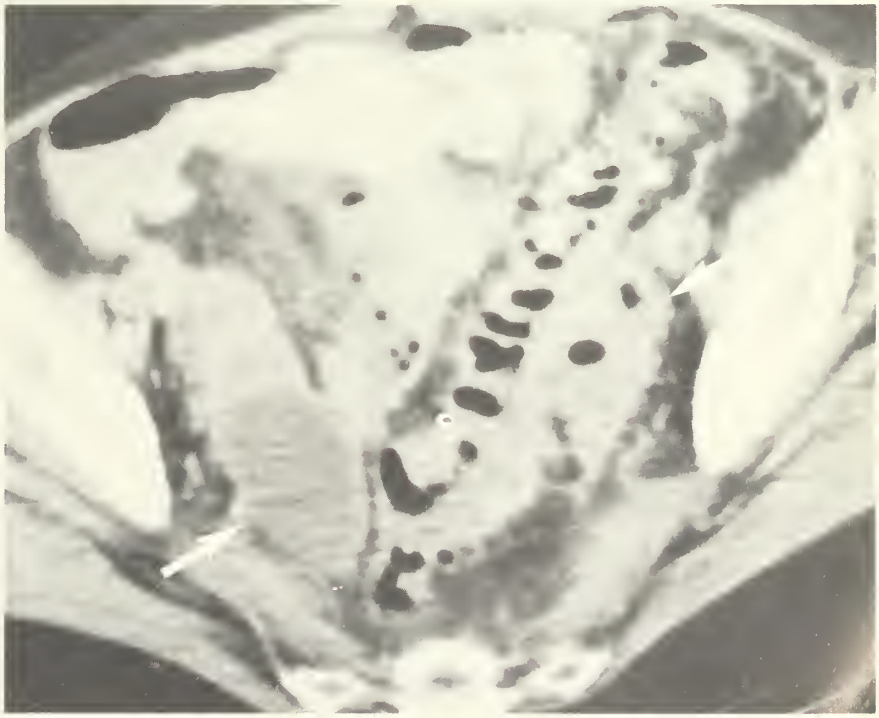


FIGURE 3: Multiple abscesses secondary to diverticulitis. A segment of sigmoid colon (S) coursing obliquely through the pelvis is shown. Two abscess collections (arrows) in the pericolic fat, the more anterior of which contains gas bubbles, are clearly demonstrated.



FIGURE 4-A: Percutaneous CT-guided drainage of diverticular abscess. A large, rounded fluid collection (arrows) lies in the pericolic fat to the left of the sigmoid colon (S). Sections at a higher level showed numerous sigmoid diverticula.

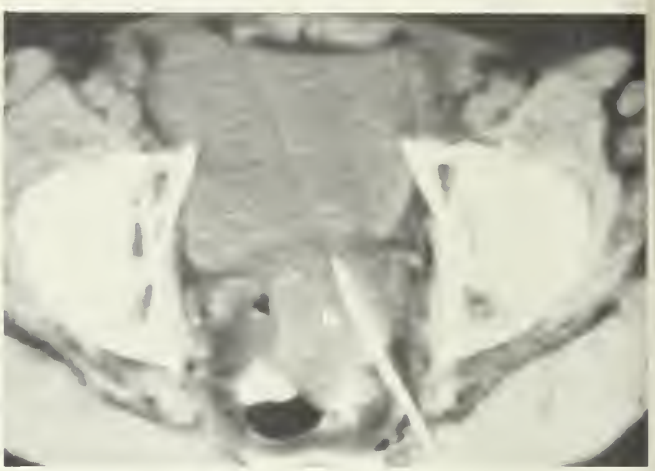


FIGURE 4-B: Percutaneous CT-guided drainage of diverticular abscess. CT section at approximately same level as Figure 4-A. Under CT guidance, a catheter has been inserted within the diverticular abscess (A), which was successfully drained via this transgluteal route. (CT section shown as if patient supine, although transgluteal drainage was performed with patient prone.)

complications. These include a colovesical fistula (evidenced by gas in the bladder in the absence of catheterization), peritonitis, and ureteric obstruction.

In addition to its diagnostic role, CT is now being utilized in selected cases for guiding the percutaneous drainage of diverticular abscesses (*Fig. 4*).[10] This more recent application of CT is discussed below.

Discussion

A contrast enema, whether performed with barium or a water-soluble contrast agent, directly visualizes only the colonic lumen. The pericolic tissues, into which the inflammatory process spreads when a diverticulum perforates, are not directly visualized unless there is extravasation of contrast material. It is therefore not surprising that a contrast enema may fail to detect the changes of complications of diverticulitis. The literature suggests that the diagnosis is missed at contrast enema in 9-14% of cases.[8,11] In addition, when compared to CT, contrast enema significantly underestimates the extent of disease in approximately one-third of cases.[8] Contrast enema is frequently deferred for 2-3 days after the onset of acute symptoms because of the fear that luminal distension will exacerbate leakage at the site of perforation. Computed tomography can be performed safely during an acute attack because rectal administration of contrast material is rarely necessary.

Particularly when diverticulitis is associated with complications, changes in the pericolic fat are demonstrated by CT in virtually all patients.[8] False-negative diagnoses appear to be perceptive and interpretive errors. Computed tomography shows abscess formation in approximately 50% of patients with severe diverticulitis, and evidence of fistulization in approximately 15%.[8] Occasionally, free peritoneal fluid indicative of peritonitis is seen. These CT findings provide objective evidence concerning the location, extent and severity of the disease which, in turn, permits more rational decisions about the management of the patient. For example, the demonstration of a large, localized abscess usually indicates the need for surgical or percutaneous drainage. Evidence of free peritonitis, while admittedly uncommon, is associated with a high mortality and requires emergency laparotomy. In the absence of an abscess or free peritonitis, medical therapy alone is often adequate.

Percutaneous catheter drainage of a diverticular abscess utilizing CT guidance is beginning to emerge as an effective alternative to surgical drainage in cases where a safe access route to the abscess is present.[10] Most pelvic abscesses secondary to diverticulitis can be drained percutaneously via an anterior approach; occasionally, a transrectal or transgluteal route (*Fig. 4*) is necessary. A fistulous communication with the involved colon is often present in patients with a large diverticular abscess. The existence of a fistula is not a contraindication to percutaneous CT-guided drainage, but it does increase the time required to close the abscess. Early experience with percutaneous drainage suggests that many patients can be spared a colostomy as well as surgical drainage, and need only undergo a one-stage surgical resection and anastomosis.[10] This is particularly valuable in elderly patients who are poor surgical risks. Further experience including long-

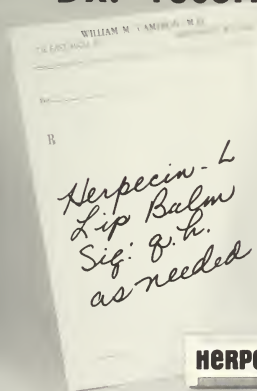
term follow-up is required in order to assess the relative merits of percutaneous and surgical drainage.

As already mentioned, mild cases of suspected diverticulitis usually do not require any imaging study during the acute phase. When convalescence is taking place, a double contrast barium enema is safe and can be used to exclude other causes for the patient's symptoms. The main role of CT lies in its ability to assess severe cases of diverticulitis with complications from both a diagnostic and, potentially, an interventional viewpoint. A contrast enema remains useful in the acute stages if a high grade colonic obstruction is suspected or if CT examination is equivocal.

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The Sleep/Wake Disorders: An Overview

MARVIN E. VOLLMER, M.D.
Indianapolis

Oh sleep! it is a gentle thing
Beloved from pole to pole.
—Samuel Coleridge
The Ancient Mariner

SLEEP DISORDERS are a heterogeneous group of conditions that either disrupt the restfulness of sleep and cause insomnia and/or daytime somnolence, change the timing of the sleep/wake cycle, or result in abnormal behaviors during sleep. These disorders are common. Recurrent insomnia affects almost 50 million Americans, 10 million of whom consult their physician each year. About half of these people receive a sleeping medication.[1]

In addition, the two most common hypersomnolent sleep disorders, obstructive sleep apnea syndrome and narcolepsy, impair the daytime alertness of more than 2 million Americans,[2] and are responsible for many automobile and industrial accidents.

Sleep/wake cycle disturbances are prevalent among the many shift workers required by our round-the-clock society. Significantly, the nuclear accidents at Three Mile Island and Chernobyl both occurred in the early morning hours when alertness has been demonstrated to be the most impaired in shift workers.

Dr. Vollmer is an accredited clinical polysomnographer and is Director, Sleep/Wake Disorders Center, Community Hospitals, Indianapolis.

Correspondence: Marvin E. Vollmer, M.D., Neurology Associates, Inc., 5508 E. 16th St., Suite 15, Indianapolis, Ind. 46218.

Finally, bedwetting and sleep walking are completely unconscious parasomnias that occur in almost 15% of normal children,[3] and all too often result in misguided punitive "treatments."

Normal Sleep Stages

Sleep was thought to be simply the absence of consciousness until the discovery in 1953 of the two main phases of sleep: Rapid Eye Movement Sleep (REM) and Non-Rapid Eye Movement Sleep (NREM).[4]

NREM sleep is further divided into four stages, and is characterized by simple mental imagery, and a low steady metabolic state with prominent hemeostatic feedback loop functioning. The restfulness of a given night's sleep is to a certain extent a function of the depth of NREM sleep. It is perhaps not surprising to learn that children spend more time in deep NREM sleep than do adults.

In contrast, REM sleep is associated with vivid dream imagery, rapid fluctuations in many cardiopulmonary functions, and uncoupling of many homeostatic feedback loops such as thermoregulation. The proportion of REM sleep remains constant throughout most of life at 20%. The "function" of REM sleep is not known. Periods of NREM sleep alternate with REM (dreaming) sleep four to six times throughout the night.

Classification

A major advance in the understanding of the clinical aspects of the sleep disorders came in 1975 when the Association of Sleep Disorders Centers (ASDC) was formed. This allowed the large scale collection of patient data. In 1979 the ASDC, among others, developed the first and current classification based upon the cardinal sleep/wake symptoms.[5] (The complete classification is given at the end of this article.) Below are listed the more common examples of each category, based upon the final diagnoses of 8,000 patients presenting to ASDC sleep centers from 1981 to 1982.[2] These are:

A. Disorders of Initiating and Maintaining Sleep: The Insomnias

1. Depression is one of the most common causes of chronic insomnia, accounting for about 35% of insomniacs presenting to sleep centers. Primary depression is characterized by early morning awakening as well as abnormally early onset of the first REM period. Interestingly, all effective antidepressant therapies have been shown to suppress REM sleep with a variable effect on sleep continuity. Physically disrupting REM sleep by awakening the patient in the second half of the night when REM is most concentrated has also been shown to have an immediate mood-elevating effect on depressed patients.

2. Psychophysiological Insomnia is one of the most common causes of chronic insomnia and is a result of maladaptive sleeping habits reinforced by the anxiety of chronically frustrated sleep. As with most of the chronic insomnias, sleeping medications are ineffective and usually exacerbate the problem. In contrast, very effective non-drug treatments have been developed such as stimulus control and sleep restriction therapies.

3. Sleep Myoclonus and the Restless Legs Syndrome account for about 15% of chronic insomniacs evaluated by ASDC sleep centers. In this condition, slow flexion movements of one or both legs occur perhaps hundreds of times throughout the night with a remarkably constant periodicity of 20-40 seconds. These leg movements may

cause micro arousals which fragment sleep. Since these leg movements cease with full awakening, the patient is virtually never aware of the cause of their chronic insomnia and poor daytime functioning. Sleep Myoclonus can result in either insomnia or a Disorder of Excessive Somnolence.

4. Chronic Use of Sleeping Pills is a common complication of any chronic insomnia. It is not widely appreciated that these medications are only temporarily effective in promoting sleep and in fact tend to prevent the patient from achieving the deeper, most restful stages of NREM sleep.

B. Disorders of Excessive Somnolence

1. The Obstructive Sleep Apnea Syndrome usually occurs in a male with a history of snoring. Snoring is a sign of partial upper airway obstruction during sleep and occurs in up to 30% of men and 15% of women. In some, this partial obstruction can become complete, causing the cessation of airflow and a significant drop in blood oxygen concentration. The apnea or hypopnea is terminated by a partial arousal which restores airflow at the expense of sleep fragmentation. This disordered breathing pattern can recur hundreds of times per night, thereby depriving the patient of adequate sleep. Waketime somnolence, morning headaches, fatigue, memory loss, impotence and cardiac arrhythmias can result. Unfortunately, the patient with sleep apnea often greatly underestimates the severity of his sleepiness, and may present for medical evaluation only at the insistence of his spouse following an automobile accident.

2. Narcolepsy is a hereditary condition that usually begins to impair daytime alertness before age 30, most often at puberty. Another frequent symptom of narcolepsy is cataplexy: attacks of generalized weakness triggered by laughter or other strong emotion. Among other hazards, the lifelong daytime sleepiness may be attributed to "laziness" and result in a downward social mobility if untreated.

3. Sleep Myoclonus/Restless Legs

The Complete Classification of the Sleep/Wake Disorders[5]

A. Disorders of Initiating and Maintaining Sleep: DIMS (The Insomnias)
1. Psychophysiological
2. associated with Psychiatric Disorders
3. associated with Drugs and Alcohol
4. associated with Sleep Induced Respiratory Impairment
5. associated with Sleep Related Myoclonous and Restless Legs Syndrome
6. associated with Other Medical, Toxic and Environmental Conditions
7. Childhood Onset DIMS
8. associated with Other DIMS Conditions

B. Disorders of Excessive Somnolence: DOES
1. Psychophysiological
2. associated with Psychiatric Disorders
3. associated with Drugs and Alcohol
4. associated with Sleep Induced Respiratory Impairment (Sleep Apnea Syndromes)
5. associated with Sleep Related Myoclonus and Restless Legs Syndrome
6. Narcolepsy
7. Idiopathic Central Nervous System Hypersomnolence
8. associated with Other Medical, Toxic and Environmental Conditions
9. associated with Other DOES Conditions

C. Disorders of the Sleep/Wake Schedule
1. Transient (Jet Lag Syndrome, etc)
2. Persistent (Frequently Changing Schedule, Delayed Sleep Phase Syndrome, etc)

D. Dysfunctions Associated with Sleep: The Parasomnias
1. Sleep Walking (Somnabulism)
2. Sleep Terror (Pavor Nocturnus, Incubus)
3. Sleep Related Enuresis (Bedwetting)
4. Other Dysfunctions
   a. Dream Anxiety Attacks (Nightmares)
   b. Sleep Related Epileptic Seizures
   c. Sleep Related Bruxism
   d. Sleep Related Headbanging
   e. Familial Sleep Paralysis
   f. Impaired Sleep Related Penile Tumescence
   g. Sleep Related Painful Erections
   h. Sleep Related Cluster Headaches and Chronic Paroxysmal Hemicrania
   i. Sleep Related Abnormal Swallowing Syndrome
   j. Sleep Related Asthma
   k. Sleep Related Cardiovascular Symptoms
   l. Sleep Related Gastroesophageal Reflux
   m. Paroxysmal Nocturnal Hemoglobinuria

Syndrome accounts for about 5% of sleepy patients evaluated by ASDC sleep centers.

C. Disorders of the Sleep/Wake Schedule

Experimental deprivation of environmental light/dark clues has shown that our sleep/wake cycles are governed by an internal "clock" located in the suprachiasmatic nucleus. This "clock" seems to have a periodicity of 25 hours. As a result we all have a tendency to stay up one hour later each night and arise one hour later the following morning. The indulgence of this tendency on weekends commonly results in the "Monday Morning Blues," due in part to the progressive delay of the sleep schedule to overlap Monday morning. Absenteeism and accidents may result from this common sleep schedule disorder. Since our internal clock has a 25-hour periodicity, it is far easier to delay rather than advance bedtime. Therefore, jet lag is more of a problem for travelers flying east rather than west. Shift workers have been shown to adjust much more easily to shift changes that take this simple fact into account.

D. Dysfunctions Associated with Sleep: The Parasomnias

1. Sleep Walking, Sleep Terrors and some cases of Bedwetting are common parasomnias characterized by partial arousal from deep NREM sleep occurring in about 15% of children. These phenomena occur most often in children who as a group have more and much deeper NREM sleep than adults. These activities tend to occur early in the night when NREM sleep is deepest, and are rarely recalled by the patient the next day. Different forms of these parasomnias often occur in the same person or family.

2. Nocturnal Seizure Disorders may have various manifestations such as sleep-walking, sleep terrors, nightmares, bedwetting or sleep talking.

Conclusion

The Sleep/Wake Disorders are common and sometimes life-threatening dysfunctions with important medical, psychiatric and industrial consequences. A practical classification has been developed, based upon the cardinal symptoms presented above. Clinical information from ASDC sleep centers throughout the world has greatly aided our understanding of these previously mysterious dysfunctions.

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Look-Alike and Sound-Alike Drug Names

BENJAMIN TEPLITSKY, R. PH.
Brooklyn, N.Y.

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Generic Name:	Suprofen	Combination drug
Dosage Forms:	Capsules	Solution, Powder, Ointment
	PROVENTIL	**PROVERA**
Category:	Bronchodilator	Progestin
Brand Name:	Proventil, Schering	Provera, Upjohn
Generic Name:	Albuterol	Medroxyprogesterone Acetate
Dosage forms:	Tablets, Syrup	Tablets

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Psychosomatic Stridor and Wheezing

RICHARD E. BRASHEAR, M.D.
Indianapolis

Abstract

A correct identification of individuals with functional (psychosomatic) stridor and/or wheezing is necessary to avoid unwarranted treatments, hospitalizations and procedures. Patients may present with psychosomatic stridor or wheezing during inspiration or inspiration and expiration, and it may be considered even during the initial contact with the patient. A high index of clinical suspicion is required to establish the correct diagnosis.

THIS IS A REVIEW of psychosomatic stridor and wheezing, sounds that may easily be misinterpreted as organic disease. The term psychosomatic is used in the context that there are no demonstrable organic findings after careful physical examination, appropriate noninvasive or invasive procedures, and evaluation of appropriate laboratory data. A careful search must be made for an organic cause of any stridor or wheezing although the physician can strongly consider a psychosomatic origin on the first visit. A psychosomatic sign or symptom is not under voluntary or conscious control.

The causes of acute obstruction of the upper airways in adults may include allergic reactions, recurrent infections, supraglottitis, angioneurotic edema, laryngeal spasm, laryngeal trauma, and tumors and abscess of the hypopharynx and larynx. Laryngoscopy and bronchoscopy usually diagnose the majority of these lesions although bilateral vocal cord paralysis may be difficult to separate from nonorganic upper airway obstruction.[1-3] Bilateral vocal cord immobility in adduction can be caused by intrinsic laryngeal lesions, peripheral nerve lesions, and central nervous system lesions.[4] Ward, *et al.* described 10 patients with a definite neurologic diagnosis and central neurogenic etiologies for their laryngeal dysfunction.[5] Cardiac emboli and brain stem ischemia can result in transient laryngeal paralysis (with the vocal cords in adduction) and stridorous breathing.[4]

The identification of individuals with stridor and/or wheezing due to abnormal laryngeal function or functional (non-organic) acute upper airway obstruction is extremely important since it may result in cyanosis, endotracheal intubation, syncope, unconsciousness, tracheostomy, severe arterial hypoxemia, unwarranted disability and impairment, unnecessary hospitalizations and treatment with corticosteroids and bronchodilators.[2,3,5-9] These patients may represent a variety of psychiatric disorders ranging from mild stress-related exacerbation of symptoms to obsessive-compulsive disorder.[9] The patient may present with either stridor or wheezing or a combination of both stridor and wheezing.

Psychosomatic Stridor

Stridor, essentially a particularly loud monophonic wheeze audible at a distance, is a loud musical sound of constant pitch and is generally applied to the inspiratory sound associated with laryngeal or tracheal pathology. However, depending on the pathology, stridor can also occur during expiration.

Non-organic laryngeal obstruction was first reported by Patterson, *et al.*[10] in a 33-year-old woman with tachypnea and a loud stridorous noise during inspiration. There was a lengthy prior history of similar episodes and it was felt the patient was "imitating" the clinical appearance of laryngeal obstruction. Rogers subsequently described two boys, ages 11 and 13 years, with functional inspiratory stridor.[11] Direct laryngoscopy, probably done with general anesthesia, was normal. Cormier, *et al.* discussed three women with inspiratory stridor with "negative" findings at bronchoscopy and laryngoscopy.[2] All three patients presented with the clinical picture of severe upper airway obstruction and the diagnosis was made on the basis of the flow-volume study and negative endoscopy. A 16-year-old boy with the sudden onset of inspiratory stridor, without wheezing, had normal laryngoscopy but it is unknown if stridor was present during the actual laryngoscopy.[12]

The "normal" laryngoscopy in these patients may have several interpretations. If the procedure was done to rule out organic pathology, a "negative" would mean no organic pathology. If stridor was due to functional vocal cord dysfunction and the patient was without stridor at the time of laryngoscopy, then the examination could be "normal." If the procedure was done when the patient was symptomatic, but done with general anesthesia or heavy sedation, then a functional abnormal-

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ity may not be appreciated. For example, one patient has normal indirect laryngoscopy after breathing returned to normal over 15 minutes and another patient was initially thought to have midline bilateral vocal cord paralysis but repeated examination after 10 mg of intravenous diazepam revealed normal functioning vocal cords.[2,10]

Rogers and Stell described two women with noisy breathing, and laryngoscopy demonstrated closure or approximation of the vocal cords during inspiration (paradoxical vocal cord movement).[13] Inspiratory stridor with adduction of the vocal cords during inspiration and abduction on expiration has been noted in five additional women.[14,15]

Appelblatt and Baker described three women with functional upper airway obstruction, stridorous respirations and dyspnea.[6] Laryngeal spasm with complete or marked adduction of the false and true vocal cords was noted in two and spastic adduction of only the false vocal cords in the third patient. A tracheostomy was performed in the three patients. A tracheostomy was also required in a 23-year-old woman with highpitched, stridorous breathing and associated hypoxemia.[7] Direct visualization demonstrated spastic vocal cord adduction throughout the entire respiratory cycle that persisted during a three-month period of observation. The vocal cord adduction failed to relax after intravenous lidocaine and diazepam, but it is difficult to decide if this was adequate anesthesia for relaxation.

Neel and Posthumus[8] described a 20-year-old woman with dyspnea and inspiratory stridor. A diagnosis of non-organic upper airway obstruction was established because, during indirect laryngoscopy, the patient's symptoms and inspiratory vocal cord closure remitted with intravenous diazepam. They also mentioned a 15-year-old girl with dyspnea and respiratory stridor that occasionally resulted in unconsciousness but laryngoscopy was not performed.

All 15 patients, age 18 years or older, with "stridor" due to non-organic laryngeal obstruction, were women and seven had a preceding upper respiratory tract infection.[2,6-8,10,13-15] Several clues to the presence of non-organic upper airway obstruction as a cause of stridor include the absence of stridor during the inspiration immediately prior to and after coughing, a prior history of emotional or psychological abnormalities, the number of episodes with no evident explanation, the normal appearance of the airway, a disparity between normal or near normal airway resistance by plethysmography and a marked decrease in the inspiratory flow noted in the flow-volume loop, the sudden onset of symptoms and the inability to demonstrate organic disease despite extensive evaluation.[2,6,10] In children with functional inspiratory stridor, the absence of stridor during sleep or when preoccupied with other activities has been noted.[11]

Psychosomatic Wheezing

Emotional laryngeal wheezing has been described in a 41-year-old woman with a 10-month history of paroxystic attacks of expiratory dyspnea and expiratory wheezing.[16] Examination demonstrated prolonged and laborious expiration and expiratory polyphonic wheezing. The wheezing sound had maximal intensity over the larynx and was weakly transmitted over the chest. Between attacks, indirect laryngoscopy was normal. During the wheezing sound, fiberoptic bronchoscopy demonstrated extreme vocal cord adduction during expiration and widening during inspiration.

Three women, two with previous psychiatric illness, have been described as "factitious" asthma.[17] There was a history of asthma, of variable duration, and the patients demonstrated inspiratory and expiratory wheezing that was loudest over the trachea. In one patient, endoscopy showed that intermittently the vocal cords were "voluntarily" held in apposition and that during these periods the wheezing was heard on auscultation.

Five patients (four of the five women) with inspiratory and expiratory wheezing and a prior diagnosis of uncontrolled "asthma" were noted by Christopher, *et al.*[9] During a typical episode of wheezing, laryngoscopy demonstrated almost complete adduction of the true vocal cords during inspiration and expiration. When asymptomatic, laryngeal function and anatomy were normal and the patients could not voluntarily reproduce the abnormal laryngeal motion.

A 26-year-old woman with wheezing and dyspnea attributed to paradoxical vocal cord adduction during inspiration and a 23-year-old female student, initially treated with tracheostomy for presumed vocal cord paralysis with wheezing and dyspnea and subsequently shown to have functional vocal cord dysfunction, have also been described.[3,18]

Clues to these patients with non-organic expiratory or expiratory and inspiratory wheezing include the absence of airway hyperreactivity with bronchial provocation testing, normal alveolar-arterial oxygen difference during an episode, atypical wheezing (loudest over larynx), history of previous psychiatric disorder or factitious disease, absence of hyperinflation on chest roentgenogram, and normal pulmonary function tests during an asymptomatic period.[9,17] It is of interest that six of the women with stridor or wheezing were closely associated with medicine, i.e., two student nurses, a nurse's aid, a physical therapist, and two "health care workers."[7,13,17,18]

The suggested evaluation for patients suspected of non-organic upper airway obstruction causing stridor or wheezing should include careful indirect laryngoscopy when initially seen, hospitalization, and subsequent direct laryngoscopy with local anesthesia and minimal sedation. If

general anesthesia is utilized for direct laryngoscopy, only the anatomy will be seen and vocal cord function cannot be assessed.[14] Fiberoptic bronchoscopy should be included to assure the absence of subglottic and tracheal neoplasms. Pulmonary function studies, especially while symptomatic, should include a maximal expiratory and inspiratory flow-volume loop and airway resistance by plethysmography.[2,9] The clinical suspicion of asthma should be confirmed by methacholine or histamine inhalation challenge or the demonstration by spirometry of reversible expiratory airflow obstruction.[19]

Treatment

The treatment of individuals with non-organic wheezing or stridor has been largely reassurance, intervention by a speech pathologist, self-hypnosis, short-term psychotherapy, relaxation techniques, and psychiatric referral. Patients for whom some type of therapy is prescribed usually demonstrate improvement.[2,3,8,9,10,12,13,15,17]

Marked improvement after one session of phonation therapy occurred in one patient and another patient was symptom-free two days after referral to a speech therapist.[2,13] In two patients, psychotherapy resulted in no recurrence during "several" to five months follow-up.[10,15] Relaxation techniques and hypnosis in three patients resulted in being symptoms-free during 6 to 12 months of follow-up.[3,8,12] With five patients, short-term psychotherapy combined with evaluation and therapy by a speech pathologist immediately reduced both the number and the severity of attacks in all patients.[9]

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MUSEUM NOTES. . .

CONTINUED FROM PAGE 421

and the intern on night duty received a telephone report from the nurse, and to save himself the trouble of going to see the patient he has given a verbal order for a hypodermic of morphia when the patient's kidney function was already at its lowest ebb, and when the cause of the pain was due to a malposition of a drainage tube which could easily have been adjusted by an intelligent intern whose duty it was.

Fourteenth—Don't give a hypodermic of morphia in any profound renal disturbance either day or night without the approval of the attending staff member, but call him and report the case and follow his suggestions.

Fifteenth—Don't fail to do all the reading you can on the cases under your observation.

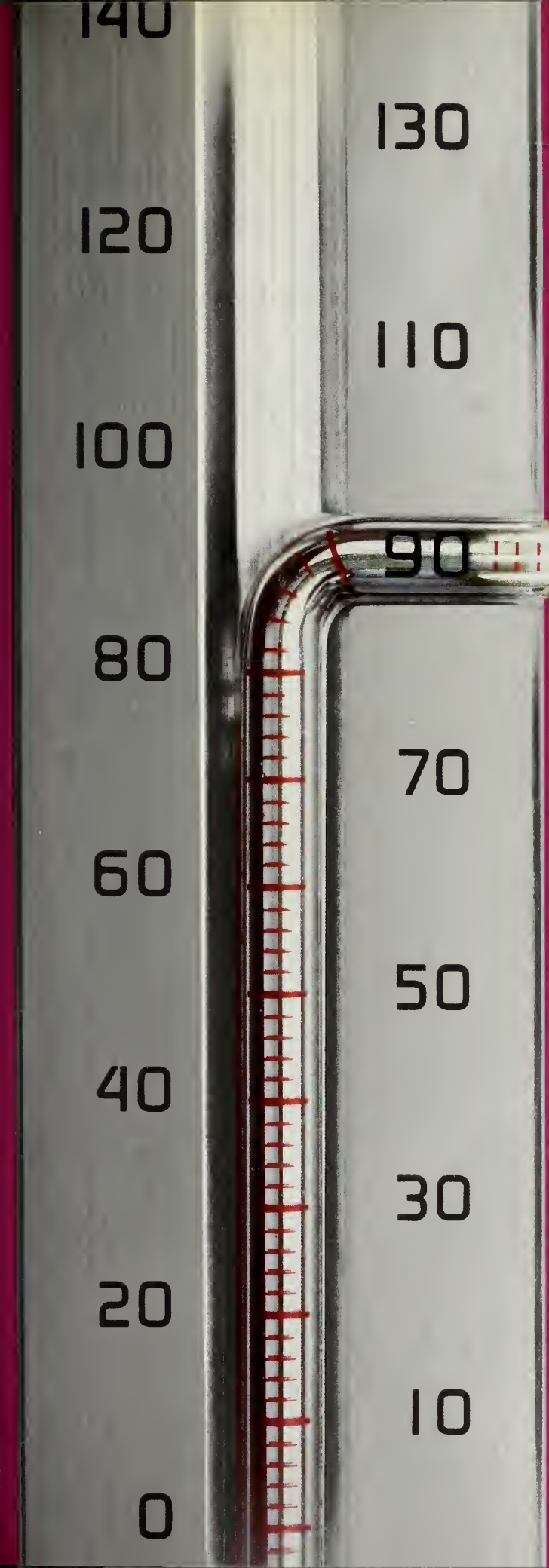
Sixteenth—Don't fail to follow them up.

Seventeenth—Don't fail to be interested in the result the same as if it were your own patient, as it really is in every case you have charge of.

Eighteenth—Don't fail to remember that the record you make in the Methodist Hospital in the next twelve months will follow you throughout your life.

The information for this month's Notes was found on page 10 of the May 28, 1909 issue of *The Indianapolis Star* and pages 526-529 of the September 1929 issue of the *Indianapolis Medical Journal*.

Dr. Wishard was born Oct. 10, 1851 in Greenwood, Ind. He died Jan. 22, 1941 at Indianapolis.



In mild to moderate hypertension

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ONCE DAILY



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240 mg scored, sustained-release tablets



JAMES B.
38, black male, heavy smoker. Prescribed a diuretic by another physician last year for hypertension.

YOUR CONCERNS
Presents with "smoker's cough." Workup reveals a BP of 150/107.

A LOGICAL CHOICE FOR CONTROL OF HIS BP
ISOPTIN* (verapamil HCl/Knoll) because...
— Black hypertensives often have low plasma renin activity and generally do not respond favorably to beta blockers.
— Beta blockers may increase the likelihood of bronchospasm.

ALICE W.
65, diabetic, overweight. Her BP has elevated to 190/98.

YOUR CONCERNS
She's on daily insulin.

A LOGICAL CHOICE FOR CONTROL OF HER BP
ISOPTIN* (verapamil HCl/Knoll) because...
— Unlike most beta blockers and diuretics, ISOPTIN has no adverse effects on serum glucose levels.
— Unlike most beta blockers, ISOPTIN does not mask the symptoms of hypoglycemia.





THOMAS G.
70, asthmatic. In the past, BP adequately controlled with 25 mg hydrochlorothiazide daily.

YOUR CONCERNS
Today patient presents with symptoms of gout. Workup reveals high uric acid level, low serum potassium, and BP elevated to 180/98.

A LOGICAL CHOICE FOR CONTROL OF HIS BP
ISOPTIN* (verapamil HCl/Knoll) because...
— Unlike diuretics, ISOPTIN will not decrease serum potassium levels or elevate uric acid levels.
— Unlike beta blockers, ISOPTIN can be used safely in asthma and COPD patients.

JOHN K.
42, Annual physical uncovered diastolic BP of 102... confirmed on three successive office visits. Unresponsive to nonpharmacologic intervention.

YOUR CONCERNS
Salesman, spends many hours of his working day in car... total cholesterol level 300, HDL 35.

A LOGICAL CHOICE FOR CONTROL OF HIS BP
ISOPTIN* (verapamil HCl/Knoll) because...
— Unlike diuretics, ISOPTIN does not cause urinary urgency.
— Unlike either beta blockers or diuretics, ISOPTIN will not adversely affect his already seriously compromised lipid profile.
— Unlike with propranolol, fatigue and impotence are rarely reported.



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In mild to moderate hypertension

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CONTRAINDICATIONS: 1) Severe left ventricular dysfunction (see WARNINGS), 2) Hypotension (less than 90 mmHg systolic pressure) or cardiogenic shock, 3) Sick sinus syndrome or 2nd or 3rd degree AV block (except in patients with a functioning artificial ventricular pacemaker).

WARNINGS: Heart Failure: ISOPTIN should be avoided in patients with severe left ventricular dysfunction (see DRUG INTERACTIONS). Patients with milder ventricular dysfunction should, if possible, be controlled before verapamil treatment. Hypotension: ISDPTIN (verapamil HCl) may produce occasional symptomatic hypotension. Elevated Liver Enzymes: Elevations of transaminases with and without concomitant elevations in alkaline phosphatase and bilirubin have been reported. Periodic monitoring of liver function in patients receiving verapamil is therefore prudent. Accessory Bypass Tract (Wolff-Parkinson-White): Patients with paroxysmal and/or chronic atrial flutter or atrial fibrillation and a coexisting accessory AV pathway have developed increased antegrade conduction across the accessory pathway producing a very rapid ventricular response or ventricular fibrillation after receiving intravenous verapamil. While this has not been reported with oral verapamil, it should be considered a potential risk. Treatment is usually D.C.-cardioversion. Atrioventricular Block: The effect of verapamil on AV conduction and the SA node may cause asymptomatic 1st degree AV block and transient bradycardia. Higher degrees of AV block, while infrequent (0.8%), may require a reduction in dosage or, in rare instances, discontinuation of verapamil HCl. Patients with Hypertrophic Cardiomyopathy (IHSS): Although verapamil has been used in the therapy of patients with IHSS, severe cardiovascular decompensation and death have been noted in this patient population.

PRECAUTIONS: Impaired Hepatic or Renal Function: Verapamil is highly metabolized by the liver with about 70% of an administered dose excreted in the urine. In patients with impaired hepatic or renal function verapamil should be administered cautiously and the patients monitored for abnormal prolongation of the PR interval or other signs of excessive pharmacological effects (see OVERDOSAGE).

Drug Interactions: Beta Blockers: Concomitant use of ISDPTIN and oral beta-adrenergic blocking agents may be beneficial in certain patients with chronic stable angina or hypertension, but available information is not sufficient to predict with confidence the effects of concurrent treatment in patients with left ventricular dysfunction or cardiac conduction abnormalities. Digitalis: Clinical use of verapamil in digitalized patients has shown the combination to be well tolerated if digoxin doses are properly adjusted. However, chronic verapamil treatment increases serum digoxin levels by 50 to 75% during the first week of therapy and this can result in digitalis toxicity. Upon discontinuation of ISOPTIN (verapamil HCl), the patient should be reassessed to avoid underdigitalization. Antihypertensive Agents: Verapamil administered concomitantly with oral antihypertensive agents (e.g., vasodilators, angiotensin-converting enzyme inhibitors, diuretics, beta blockers, prazosin) will usually have an additive effect on lowering blood pressure. Patients receiving these combinations should be appropriately monitored. Disopyramide: Disopyramide should not be administered within 48 hours before or 24 hours after verapamil administration. Quinidine: In patients with hypertrophic cardiomyopathy (IHSS), concomitant use of verapamil and quinidine resulted in significant hypotension. There has been a report of increased quinidine levels during verapamil therapy. Nitrates: The pharmacologic profile of verapamil and nitrates as well as clinical experience suggest beneficial interactions. Cimetidine: Two clinical trials have shown a lack of significant verapamil interaction with cimetidine. A third study showed cimetidine reduced verapamil clearance and increased elimination to 1/2. Anesthetic Agents: Verapamil may potentiate the activity of neuromuscular blocking agents and inhalation anesthetics. Carbamazepine: Verapamil may increase carbamazepine concentrations during combined therapy. Rifampin: Therapy with rifampin may markedly reduce oral verapamil bioavailability. Lithium: Verapamil may lower lithium levels in patient on chronic oral lithium therapy. Carcinogenesis, Mutagenesis, Impairment of Fertility: There was no evidence of a carcinogenic potential of verapamil administered to rats for two years. Verapamil was not mutagenic in the Ames test. Studies in female rats did not show impaired fertility. Effects on male fertility have not been determined. Pregnancy (Category C): There are no adequate and well-controlled studies in pregnant women. ISOPTIN crosses the placental barrier and can be detected in umbilical vein blood at delivery. This drug should be used during pregnancy, labor, and delivery, only if clearly needed. Nursing Mothers: ISOPTIN is excreted in human milk, therefore, nursing should be discontinued while verapamil is administered. Pediatric Use: Safety and efficacy of ISOPTIN in children below the age of 18 years have not been established.

ADVERSE REACTIONS: Constipation 8.4%, dizziness 3.5%, nausea 2.7%, hypotension 2.5%, edema 2.1%, headache 1.9%, CHF/pulmonary edema 1.8%, fatigue 1.7%, bradycardia 1.4%, 3° AV block 0.8%, flushing 0.1%, elevated liver enzymes (see WARNINGS). The following reactions, reported in less than 1.0% of patients, occurred under conditions (open trials, marketing experience) where a causal relationship is uncertain; they are mentioned to alert the physician to a possible relationship: angina pectoris, arthralgia and rash, AV block, blurred vision, cerebrovascular accident, chest pain, claudication, confusion, diarrhea, dry mouth, dyspnea, ecchymosis or bruising, equilibrium disorders, exanthema, gastrointestinal distress, gingival hyperplasia, gynecomastia, hair loss, hyperkeratosis, impotence, increased urination, insomnia, macules, muscle cramps, myocardial infarction, palpitations, paresthesia, psychotic symptoms, purpura (vasculitis), shakiness, somnolence, spotty menstruation, sweating, syncope, urticaria. Treatment of Acute Cardiovascular Adverse Reactions: Whenever severe hypotension or complete AV block occur following oral administration of verapamil, the appropriate emergency measures should be applied immediately, e.g., intravenously administered isoproterenol HCl, levarterenol bitartrate, atropine (all in the usual doses), or calcium gluconate (10% solution). If further support is necessary, inotropic agents (dopamine or dobutamine) may be administered. Actual treatment and dosage should depend on the severity and the clinical situation and the judgment and experience of the treating physician.

OVERDOSAGE: Treatment of overdosage should be supportive. Beta-adrenergic stimulation or parenteral administration of calcium solutions may increase calcium ion flux across the slow channel, and have been used effectively in treatment of deliberate overdosage with verapamil. Clinically significant hypotensive reactions or fixed high degree AV block should be treated with vasopressor agents or cardiac pacing, respectively. Asystole should be handled by the usual measures including cardiopulmonary resuscitation.

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Renal and Ureteral Calculi: Current Management

JOHN W. SCOTT, M.D.[1]
JAMES E. LINGEMAN, M.D.[2]
Indianapolis

THE SURGICAL MANAGEMENT of renal and ureteral calculi has changed dramatically in the 1980s. Previously, open surgery was required for most nonpassable stones in the upper urinary tract. The recent trend of less invasive management portrays an interesting return to the ancient precepts in the treatment of urinary calculi.

As mentioned in the Hippocratic oath, "I will not use the knife, either on sufferers from stone but will give place to such as are craftsmen therein," the earliest management was less invasive. Ancient Egyptians removed bladder calculi by dilating the urethra with a wooden cannula and sucking out the stone.

The earliest lithotomists, craftsmen who performed this task considered too menial by physicians, were the Greeks and Romans. Around 25 B.C., they approached bladder calculi with a perineal incision and extracted the stone with a hook or finger. Understandably, incontinence, fistula, hemorrhage, and impotence were frequent sequelae to this very painful operation. Mortality was high, but the lithotomists were held responsible for bad results and punished accordingly.

The perineal approach, with minor surgical variations, to bladder calculi remained in vogue for centuries.[1,2] Douglas and Cheselden in the early 1700s were the first to describe the suprapubic approach to bladder stones. The indications for open surgical management of urinary calculi broadened over the next two centuries to involve upper tract urinary calculi.

The first nephrolithotomy and pyelolithotomy were performed in 1880.[3] Variations and refinements of these two procedures occurred over the next several decades. Dees, in 1943, developed the coagulum pyelolithotomy for the treatment of multiple renal calculi.[4] Originally, pure human serum was used, but unfortunately, the rate of transmitted hepatitis was unacceptably high.

Extended pyelolithotomy, developed by Gil-Vernet in 1965, provided an alternative to the transparenchymal approach to staghorn calculi.[3] Based upon the intrinsic renal vascular anatomy, Smith and Boyce introduced anatrophic nephrolithotomy in 1967.[5] As part of these latter two procedures, the collecting system could be reconstructed if necessary for an underlying anatomic abnormality.

The open surgical approach to upper tract urinary calculi continued into the 1970s. Recently, dramatic advancements in medical technology have allowed less invasive procedures to supplement most open surgical operations in the management of renal and ureteral calculi. As an example, nearly 50% of patients treated at Methodist

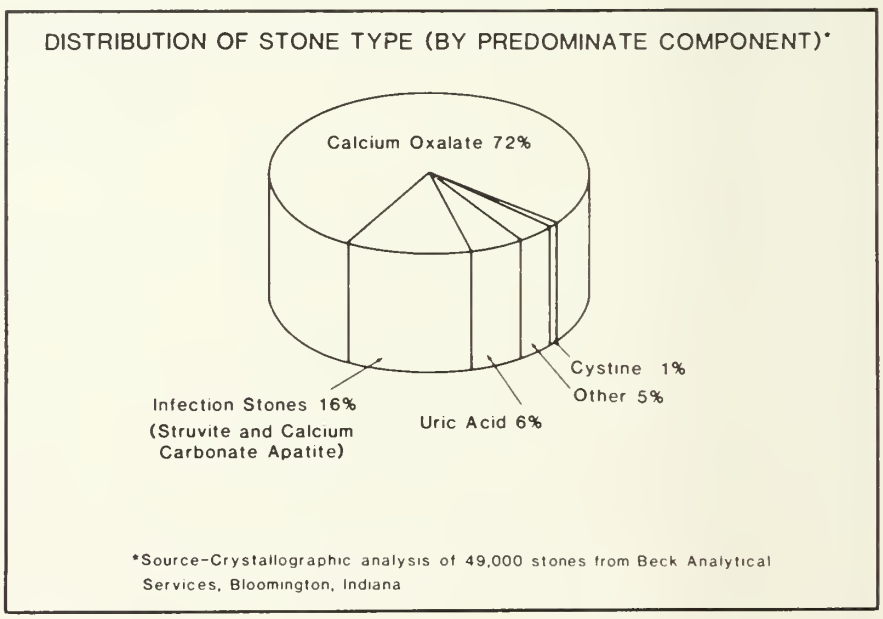


FIGURE 1

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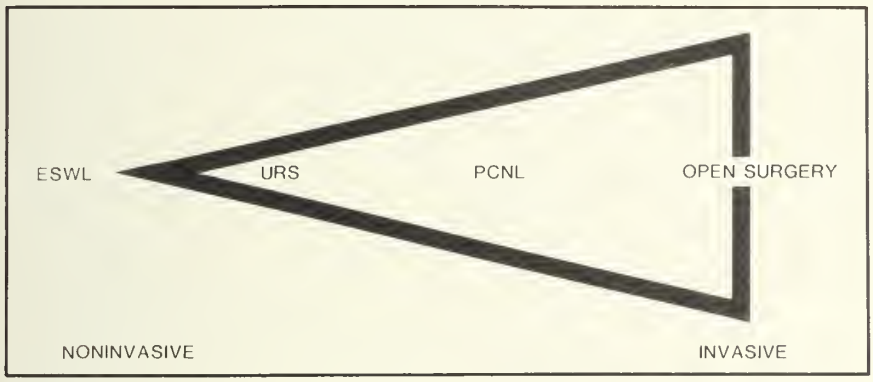


FIGURE 2

Hospital in 1984 for nonpassable upper urinary tract calculi required open surgery. However, by 1985, this rate had dropped to less than 2.5% for similarly treated patients.[6] The purpose of this article is to increase awareness of these newer less invasive techniques in managing renal and ureteral calculi.

The impact of urolithiasis on society is significant. It is a commonly encountered clinical problem, with at least two to five percent of the population developing a calculus during their lifetime. Blacks and American Indians have a relatively low incidence of nephrolithiasis. Approximately one person in 1,000 will be admitted each year with a diagnosis of a renal or ureteral calculus. Throughout the world, the composition of stones is quite variable. However, in North America with the "stone belts" located in the northwest, southwest, and southeast, the distribution of stones encountered in actual practice is depicted in *Figure 1*.

Estimates of recurrence range as high as 70%.[7] Previously, one-third of those patients, requiring more than one operative procedure on a renal unit, eventually lost that kidney. With a male predominance of 3 to 1 and peak incidence between the ages of 20 and 50, the economic impact of urolithiasis is quite apparent.[8,9,10] According to one recent source, the total cost to society, including time lost from work, hospital and physician expenses, medical treatment, and convalescence is $1.4 billion per year.[10]

Fortunately, the majority of stone patients will pass their stones spontaneously. Indications for stone removal include significant pain, obstruction, infection, hematuria, solitary kidney, or renal failure.[5,11]

Surgical approaches to urolithiasis can be placed along a spectrum of invasiveness (*Figure 2*). At one end, classified as invasive, are the open procedures, such as nephrolithotomy, pyelolithotomy, and ureterolithotomy. These procedures require a skin incision in the inguinal, flank, or posterior/lumbotomy areas for stone removal. A general or regional anesthetic is necessary and hospitalization generally lasts one to two weeks. Complete recovery, though, may take four to six weeks.[10,12]

Recently, less invasive procedures have become more popular and certainly more desirable in the management of renal and ureteral calculi. Percutaneous nephrostolithotomy (PCNL)

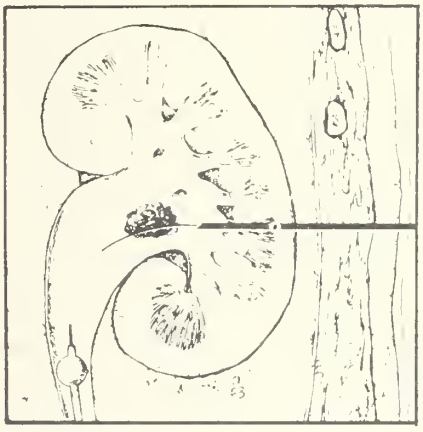


FIGURE 3-A

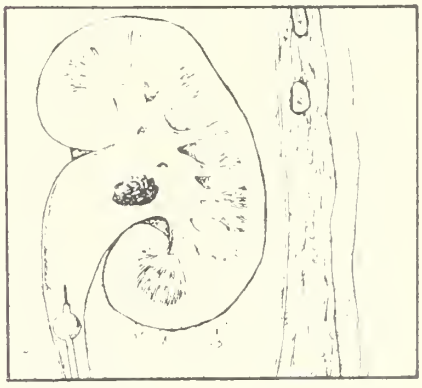


FIGURE 3-B

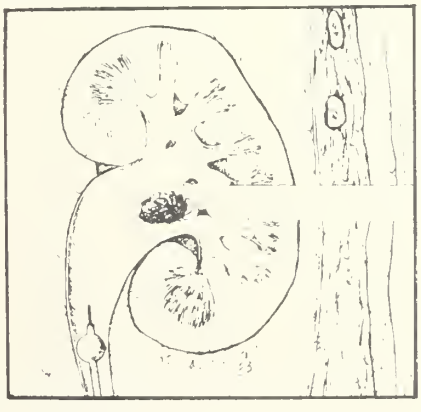


FIGURE 3-C

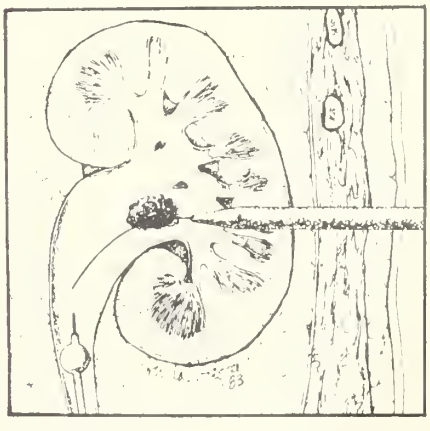


FIGURE 3-D

and ureterorenoscopy (URS) have largely replaced the previously mentioned invasive procedures. Patient morbidity is low and hospitalization averages four to eight days. Full recovery can generally be attained in one to two weeks.[10,12]

At the noninvasive end of the spectrum is extracorporeal shock wave lithotripsy (ESWL). Originally developed by the Dornier Company in West Germany, this device is applicable to most urinary tract stones. The hospital stay is approximately two days. Patient recovery time is usually negligible.[10,13]

These newer procedures will subsequently be discussed individually, though as a group they should be viewed as complimentary, not exclusive to one another. As a result of this, nearly 99% of stones previously requiring open surgical procedures can be managed with less and/or noninvasive procedures.[13]

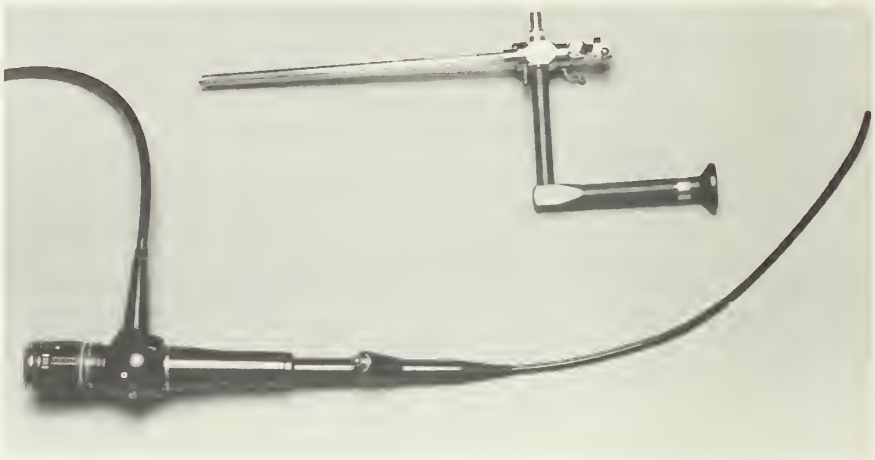


FIGURE 4: Rigid nephroscope (top) and flexible nephroscope.

Percutaneous Nephrostolithotomy

Over the past six years, the percutaneous removal of renal calculi has rapidly become established as an alternative to invasive surgery. This procedure can be divided into two major steps. Establishment of access to the kidney, with or without dilatation, may be done initially, with later removal of the stone.[14] This is known as a two-stage approach. We favor the one-stage approach, which combines the percutaneous renal access and subsequent stone removal under one anesthetic.

The procedure begins with the cystoscopic placement of a ureteral catheter. At the tip of the catheter is a balloon, which is used to obstruct the urinary system at the level of the ureteropelvic junction (*Figure 3-A*). Through the catheter, contrast can be injected which will opacify the renal pelvis and calices. Fluoroscopy is necessary during the access portion of the procedure. The patient is then placed in a 30° oblique prone position.

At a point 2 cm. inferior and medial to the tip of the twelfth rib, an 18-gauge translumbar aortogram or splenic needle is used to enter the collecting system. The path of the needle is usually transparenchymal via a lower pole, posterior calix. With the needle stylet removed, a flexible tip guide wire is passed through the needle and beyond the stone into the ureter *Figure 3-B*). The needle is removed and the tract initially dilated to 12-14 fr. with fascial dilators (*Figure 3C*).

At this point, a wider lumen catheter is passed over the initial guide wire, and a second wire, usually stiffer, is passed. The original guide wire is designated the safety wire, and after the catheter is removed, is placed aside and securely anchored to the drapes. The purpose of two wires is to assure renal access should the remaining working wire become dislodged or damaged during subsequent further tract dilatation.

Several methods of dilation are possible. Rigid or semi-rigid dilators with increments of 2-3 fr. are passed over the working wire. Alternatively, a 10 mm. balloon dilator can be used. Once the tract has been dilated up to 30 fr., a large dilator with working sheath (usually 32 fr.) is passed over the wire. The dilator is then removed leaving the sheath and working wire in place.[15] The sheath serves as a direct conduit from the skin to kidney, precluding false passage of the tract. In addition, the sheath allows the system to be irrigated and parenchymal bleeding tamponaded.

Mechanical extraction of the stone is performed in several different ways. The preferred approach is the endoscopic removal of the stone intact, if possible (*Figure 3-D*). The nephroscope is similar to a cystoscope, in allowing the use of stone baskets or alligator forceps for stone removal.[15] For stones not present in the field of the rigid nephroscope, a flexible nephroscope is available (*Figure 4*). This allows stone extraction from nearly all recesses of the kidney. If, during endoscopic manipulation, bleeding begins to obscure the field, fluoroscopy can be used to continue the case.

Renal calculi greater than 1.5 cm. usually need to be fragmented with ultrasonic or electrohydraulic lithotripsy prior to removal. In ultrasonic lithotripsy, electrical energy is used to excite a ceramic crystal, which resonates at a specific frequency, generating sound waves from 23,000-25,000 hertz. These sound waves are transmitted along a hollow probe and are converted to mechanical energy, striking the stone thousands of times per second. The fragmented stone is then aspirated through the probe by means of a suction apparatus at the opposite end. The ultrasonic probe is rigid, limiting its access to all

areas of the kidney through a single nephrostomy tube.[16]

The principle of electrohydraulic lithotripsy is to use a high capacity condenser to create a high voltage spark between electrodes at the tip of an underwater probe. This vaporizes the water, thus creating a shock wave that is capable of fragmenting stones. The probe is flexible; therefore, it can be passed through a rigid or flexible nephroscope. These fragments then need to be manually extracted.[15]

At the conclusion of the procedure, the nephroscope and working sheath are removed. Over the working wire, a nephrostomy tube is placed. Once the tip of the nephrostomy tube is positioned in the collecting system and confirmed fluroscopically, the working wire and safety wire are removed. The nephrostomy tube usually remains in place three to five days. A nephrostogram is obtained prior to tube removal to check for residual calculi, extravasation and drainage.[16]

Depending upon stone size and degree of operator skill, a single stage stone removal can typically be performed in two to three hours. A review of 1,000 cases at the Mayo Clinic reveals a significant complication rate of 3%. The most important of these is sudden postoperative bleeding from an arteriovenous fistula or arterial pseudoaneurysm formation (0.5% of cases).[17] In general, these patients are managed arteriographically with embolization of the bleeding vessel.[18] Injuries to the pleura, liver, spleen, duodenum and colon have been described.[19]

Ureterorenoscopy

Ureterorenoscopy (URS), or the transurethral visualization of the ureter and renal pelvis, is a concept that developed over many years, becoming a predictable, planned procedure in 1978 (*Figure 5*). The procedure facilitates the diagnosis of ureteral lesions by allowing for visual inspection but is most commonly used for the removal of ureteral calculi.

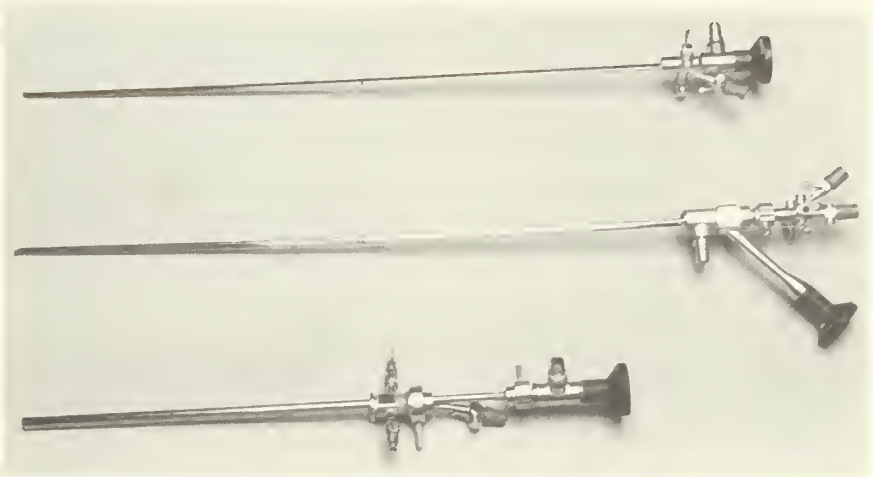


FIGURE 5: 9.5 fr. ureterorenoscope (top), 11.5 fr. ureterorenoscope (middle), and cystoscope (bottom).

Initially, cystoscopy and retrograde pyelography are performed. This will locate the position of the stone and delineate the lower ureteral anatomy. A flexible tip guide wire is then passed through the ureteral orifice, up the ureter, and preferably beyond the stone. Over the wire, plastic, metal or balloon dilators are used to dilate the ureteral orifice and intramural ureter, typically to 21 fr. The dilation process is monitored fluoroscopically. Once completed, the cystoscope is removed and the ureteroscope is passed, under direct vision, up to the stone. If the stone is small, it may be removed with basket extraction. Larger stones require fragmentation by ultrasonic or electrohydraulic lithotripsy as described previously. At the conclusion of the procedure, a ureteral catheter or stent is passed over the guide wire and subsequently left in place for one to two days.[20]

Significant complications occur in approximately 10% of patients, the most common of which is perforation of the ureter. Most will heal within 48 hours while the ureteral catheter is in place. If follow-up contrast studies demonstrate persistent extravasation, an indwelling ureteral double-J stent or proximal diversion with a percutaneous nephrostomy tube may be necessary. Ureteral avulsion, bleeding, and sepsis are rare complications.[20,21] The complication rate for a comparable open surgical approach is 17.5%.[22]

Extracorporeal Shock Wave Lithotripsy

Few developments in modern medicine can approach the impact that extracorporeal shock wave lithotripsy (ESWL) has had on the surgical treatment of renal and ureteral calculi. Essentially noninvasive, ESWL was first developed by Dornier systems, a West German aerospace manufacturer, in cooperation with urologists at the University of Munich. Their research has shown that shock waves generated outside the body can pulverize urinary stones inside the body.

The geometric properties of a semi-ellipsoid are such that shock waves generated at the first focal point (F1) propogate spherically. These waves are then reflected by the ellipsoid and converge at the second focal point (*Figure 6*). At this point (F2) pressures in the range of 1000 bar are achieved, which is sufficient for effective stone disintegration in 98% of treatments.

Shock waves follow the physical laws of acoustics, being reflected in direct proportion to the difference in the acoustical density of the media through

which they pass. Since water comprises 75% of the human body, and if the shock wave is generated underwater, the change in acoustical density as the shock wave enters the body is small, thus allowing it to be transmitted to the stone with minimal loss of energy. The kidney stone is placed at the second focal point (F2) by means of a hydraulic positioning system and two fluoroscopic monitors.

As the shock waves converge on the stone at F2 (an area of 1.5 cm.^{3}), they are reflected due to the much greater acoustical density of the stone, thus imparting energy that generates sheer forces and results in stone fragmentation. These fragments, which are usually less than 2 mm., are passed down the ureter over a period of several days and eliminated during voiding.[10,13,23] The first treatment with ESWL in the United States took place in February 1984 at the Methodist Hospital of Indiana. As of this writing, more than 5,000 patients have now been treated at this institution.

Morbidity following ESWL is the lowest of any form of treatment of upper urinary tract calculi. Multiple treatments are necessary in 10%, and approximately 8% of patients will need additional procedures, most commonly cystoscopy and stone manipulation, to facilitate discharge of fragments. Nonsurgical complications occurred in 2.5%. The most significant of these is perinephric hematoma (0.4%).[13,23]

The clinical application of PCNL, URS, and ESWL and the treatment of nonpassable renal and ureteral calculi is quite broad and variable.

Of primary importance is the size and position of the offending stone. Ureteral calculi located in the distal one-third of the ureter are successfully removed, nearly 100% of the time, when approached transurethrally with the ureterorenoscope.[21] The success rate for stones treated by this technique in the mid and proximal ureter decreases to 60-80%, however.[24] ESWL alone for proximal ureteral stones in situ is also not consistently successful.[13]

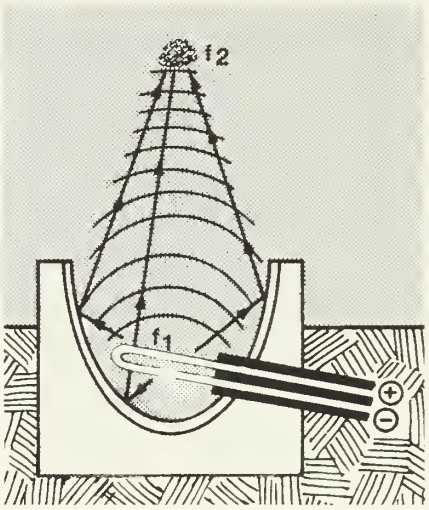


FIGURE 6

If, however, the ureteral calculus is manipulated back into the renal pelvis prior to ESWL,[21] the success rate increases to 95%. Therefore, retrograde manipulation and ESWL are better than URS in the treatment of mid and upper ureteral stones. Percutaneous nephrostolithotomy also can be used to remove mid and upper ureteral stones. The success rate of this approach is comparable to that of retrograde manipulation and ESWL;[25] however, the morbidity is considerably greater.

Most renal calculi may be approached with ESWL, PCNL, or a combination of the two. Stones ranging in size from less than 1 cm. to full staghorns can be removed by these lesser invasive procedures. As demonstrated by *Table 1*, ESWL is preferred for calculi less than two centimeters because it is highly efficacious and less morbid than PCNL. The volume of gravel that must be passed when ESWL is utilized for stones larger than two centimeters can be rather burdensome, frequently requiring adjunctive procedures (*Table 2*). As a result, PCNL is usually the preferred initial surgical approach to renal calculi larger than two centimeters.

Staghorn calculi (stone in the renal pelvis extending into at least two calices) are the most difficult to treat. An aggressive approach to staghorns is necessary as conservative treatment results in mortality rates from complications in up to 30% of patients within five years.[26]

The majority of staghorn calculi can be managed without open surgery. A combination of PCNL and ESWL is more effective than either procedure alone.[27] If used alone, ESWL has poor results unless the stone is limited to the upper calices. Lower pole partial staghorn fragments tend to collect in the dependent calices with ESWL alone. For these and full staghorns, the stones are first "debulked" percutaneously with the residual stone treated with ESWL.[13,27] Approaching these stones percutaneously as the initial procedure may be all that is necessary. Since struvite and cystine comprise the majority of staghorns and are at high risk for recurrence, the fact that PCNL and ESWL may be performed repeatedly without increasing technical difficulty is a major advantage relative to open surgery. It is now possible to render more than 90% of staghorn patients stone-free without open surgery. However, factors such as marked obesity, complex renal architecture, infundibular stenosis, and malrotated or ectopic kidneys may favor open surgery.[27]

As a group, patients with renal calculi can be treated with ESWL alone in 85% of the cases. Approximately 15% of patients with larger or ureteral stones will require a combination of PCNL, ESWL, and/or URS, leaving only 1% of all stone patients requiring open surgery. These patients represent the lesser invasive treatment failures or extenuating circumstances previously mentioned regarding staghorn calculi.

It is important to emphasize that urolithiasis is a multisystem disease, of which surgery is only one aspect of treatment. Since a metabolic etiology can be found in approximately 90% of cases, appropriate metabolic evaluation should be considered in all stone-forming patients.[28]

TABLE 1

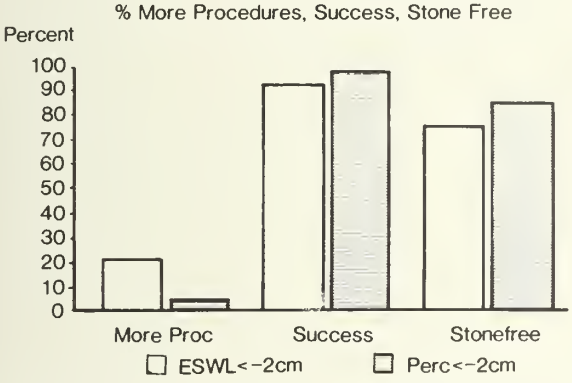
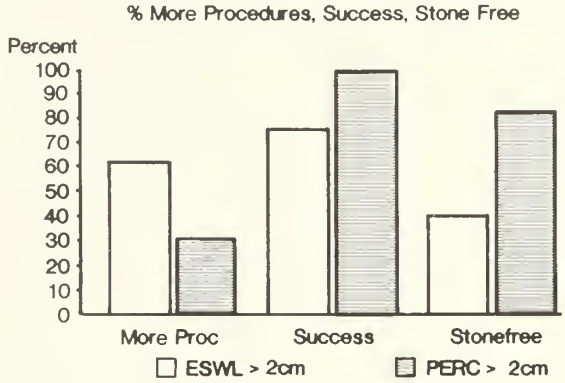


TABLE 2



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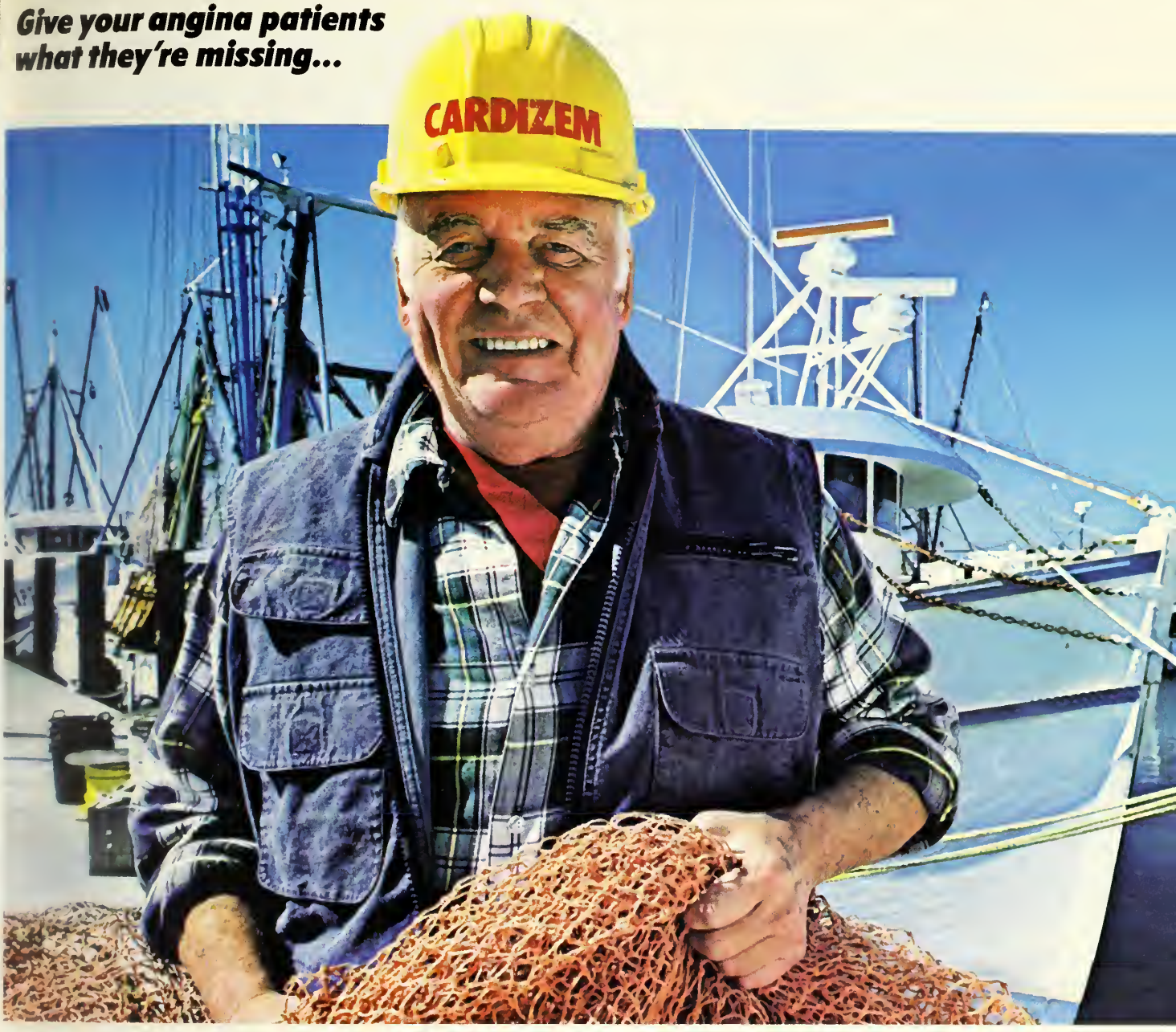
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CONTRAINDICATIONS
CARDIZEM is contraindicated in (1) patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker, (2) patients with second- or third-degree AV block except in the presence of a functioning ventricular pacemaker, and (3) patients with hypotension (less than 90 mm Hg systolic).

WARNINGS

1. ***Cardiac Conduction.*** *CARDIZEM prolongs AV node refractory periods without significantly prolonging sinus node recovery time, except in patients with sick sinus syndrome. This effect may rarely result in abnormally slow heart rates (particularly in patients with sick sinus syndrome) or second- or third-degree AV block (six of 1,243 patients for 0.48%). Concomitant use of diltiazem with beta-blockers or digitalis may result in additive effects on cardiac conduction. A patient with Prinzmetal's angina developed periods of asystole (2 to 5 seconds) after a single dose of 60 mg of diltiazem.*
2. ***Congestive Heart Failure.*** *Although diltiazem has a negative inotropic effect in isolated animal tissue preparations, hemodynamic studies in humans with normal ventricular function have not shown a reduction in cardiac index nor consistent negative effects on contractility (dp/dt).*
   Experience with the use of CARDIZEM alone or in combination with beta-blockers in patients with impaired ventricular function is very limited. Caution should be exercised when using the drug in such patients.
3. ***Hypotension.*** *Decreases in blood pressure associated with CARDIZEM therapy may occasionally result in symptomatic hypotension.*
4. ***Acute Hepatic Injury.*** *In rare instances, significant elevations in enzymes such as alkaline phosphatase, CPK, LDH, SGOT, SGPT, and other symptoms consistent with acute hepatic injury have been noted. These reactions have been reversible upon discontinuation of drug therapy. The relationship to CARDIZEM is uncertain in most cases, but probable in some. (See PRECAUTIONS.)*

PRECAUTIONS
General. *CARDIZEM (diltiazem hydrochloride) is extensively metabolized by the liver and excreted by the kidneys and in bile. As with any new drug given over prolonged periods, laboratory parameters should be monitored at regular intervals. The drug should be used with caution in patients with impaired renal or hepatic function. In subacute and chronic dog and rat studies designed to produce toxicity, high doses of diltiazem were associated with hepatic damage. In special subacute hepatic studies, oral doses of 125 mg/kg and higher in rats were associated with histological changes in the liver which were reversible when the drug was discontinued. In dogs, doses of 20 mg/kg were also associated with hepatic changes; however, these changes were reversible with continued dosing.*

Drug Interaction. *Pharmacologic studies indicate that there may be additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with CARDIZEM. (See WARNINGS.)*

Controlled and uncontrolled domestic studies suggest that concomitant use of CARDIZEM and beta-blockers or digitalis is usually well tolerated. Available data are not sufficient, however, to predict the effects of concomitant treatment, particularly in patients with left ventricular dysfunction or cardiac conduction abnormalities. In healthy volunteers, diltiazem has been shown to increase serum digoxin levels up to 20%.

Carcinogenesis, Mutagenesis, Impairment of Fertility. *A 24-month study in rats and a 21-month study in mice showed no evidence of carcinogenicity. There was also no mutagenic response in in vitro bacterial tests. No intrinsic effect on fertility was observed in rats.*

Pregnancy. *Category C. Reproduction studies have been conducted in mice, rats, and rabbits. Administration of doses ranging from five to ten times greater (on a mg/kg basis) than the daily recommended therapeutic dose has resulted in embryo and fetal lethality. These doses, in some studies, have been reported to cause skeletal abnormalities. In the perinatal/posthatal studies, there was some reduction in early individual pup weights and survival rates. There was an increased incidence of stillbirths at doses of 20 times the human dose or greater.*

There are no well-controlled studies in pregnant women, therefore, use CARDIZEM in pregnant women only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers. *Diltiazem is excreted in human milk. One report suggests that concentrations in breast milk may approximate serum levels. If use of CARDIZEM is deemed essential, an alternative method of infant feeding should be instituted.*

Pediatric Use. *Safety and effectiveness in children have not been established.*

ADVERSE REACTIONS
Serious adverse reactions have been rare in studies carried out to date, but it should be recognized that patients with impaired ventricular function and cardiac conduction abnormalities have usually been excluded.

In domestic placebo-controlled trials, the incidence of adverse reactions reported during CARDIZEM therapy was not greater than that reported during placebo therapy.

The following represent occurrences observed in clinical studies which can be at least reasonably associated with the pharmacology of calcium influx inhibition. In many cases, the relationship to CARDIZEM has not been established. The most common occurrences as well as their frequency of presentation are: edema (2.4%), headache (2.1%), nausea (1.9%), dizziness (1.5%), rash (1.3%), asthenia (1.2%). In addition, the following events were reported infrequently (less than 1%):

Cardiovascular:	*Angina, arrhythmia, AV block (first degree), AV block (second or third degree — see conduction warning), bradycardia, congestive heart failure, flushing, hypotension, palpitations, syncope*
Nervous System:	*Amnesia, gait abnormality, hallucinations, insomnia, nervousness, paresthesia, personality change, somnolence, tinnitus, tremor*
Gastrointestinal:	*Anorexia, constipation, diarrhea, dysgeusia, dyspepsia, mild elevations of alkaline phosphatase, SGOT, SGPT, and LDH (see hepatic warnings), vomiting, weight increase*
Dermatologic:	*Petechiae, pruritus, photosensitivity, urticaria*
Other:	*Amblyopia, dyspnea, epistaxis, eye irritation, hyperglycemia, nasal congestion, nocturia, osteoarticular pain, polyuria, sexual difficulties*

The following postmarketing events have been reported infrequently in patients receiving CARDIZEM: alopecia, gingival hyperplasia, erythema multiforme, and leukopenia. However, a definitive cause and effect between these events and CARDIZEM therapy is yet to be established.

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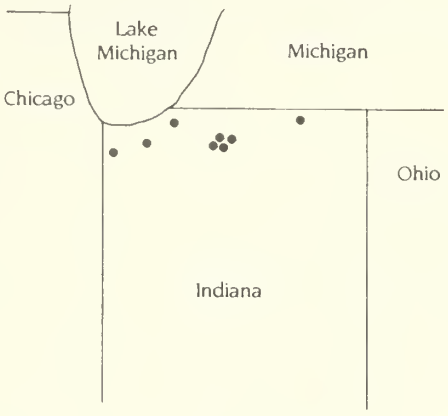
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Recombinant Tissue-Type Plasminogen Activator as a Thrombolytic Agent in Acute Myocardial Infarction

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ACUTE MYOCARDIAL infarction is caused by thrombotic occlusion of a coronary artery, usually at the site of a pre-existing atherosclerotic plaque.[1,2] Previously published reports from our institution with intracoronary and intravenous streptokinase (SK)[3,4] demonstrated successful lysis of intracoronary thrombi during acute MI in 42% of patients receiving intravenous SK, and 59% of patients receiving intracoronary SK. Patients who undergo successful thrombolysis show improvements in left ventricular function.[5]

A large scale randomized trial comparing intravenous SK with placebo in 11,712 patients demonstrated a 47% reduction in in-hospital mortality in patients who received SK in the first hour of their myocardial infarction, and a 20% mortality reduction if streptokinase was given within three hours.[6] Worldwide experience with thrombolysis using SK has led to a search for parenteral agents that are even more efficacious in the lysis of intracoronary thrombi causing acute myocardial infarction.

The Cardiovascular Section at Methodist Hospital of Indiana recently completed a randomized, placebo controlled, double-blind trial of recombinant tissue-type plasminogen activator (rt-PA) in acute myocardial infarction. This investigation was a joint project involving the University of Michigan Medical School, the University of Texas Medical School, Crawford Long Hospital (Atlanta, Georgia), and Methodist Hospital of Indiana. The project was sponsored by Genetech, Inc., the manufacturer of the rt-PA (Activase™) used in this investigation.

Methods

Patients were *eligible* to receive rt-PA if they:

1. Were 18 to 75 years old.
2. Had chest pain greater than 30 minutes or less than six hours consistent with coronary ischemia and unrelieved with sublingual nitroglycerin.
3. ST segment elevation of at least 0.1 mV in two leads consistent with acute MI.
4. Willing and able to give informed consent.

Patients were *excluded* from the study if they met any of the following criteria:

1. History of any significant bleeding disorder, or significant gastrointestinal bleeding.
2. Cerebrovascular accident, head or spine trauma in the past six months.
3. Major surgery on internal organs during the previous 14 days.
4. Diastolic blood pressure greater than 120.
5. Coumadin therapy.
6. Shock (SBP less than 80 requiring pressors or intra-aortic balloon pump).
7. Dilated cardiomyopathy, prosthetic heart valve, left bundle branch block, previous CABG.
8. Prolonged CPR in the past two weeks.
9. Known or suspected pregnancy.

Results

Eligible patients were randomized in a 3 to 1 ratio to receive either intravenous rt-PA or placebo while being prepared for coronary angiography. At the time of coronary angiography, which was done at 60 minutes after the start of IV rt-PA or placebo, the infarct-related vessel was patent in 59% of rt-PA-treated patients, compared to 11% of placebo-treated patients.

The rt-PA treated patients continued to receive rt-PA for the next two hours. Angiograms at 90 and 120 minutes in these patients showed patent infarct-related vessels in 71% and 84%, respectively. Patients who initially received placebo received intracoronary SK after the 60-minute angiogram. At the 90- and 120-minute angiogram, these patients had 25% and 28% of infarct-related vessels patent.

Of 93 patients who were randomized to receive rt-PA, 61 subsequently underwent percutaneous transluminal coronary angioplasty (PTCA) for underlying residual stenosis or persistent vessel occlusion not responsive to rt-PA. Of 23 patients who received

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placebo initially, followed by intracoronary SK therapy, 19 underwent PTCA for residual stenosis or persistent total vessel occlusion.

Four of 93 rt-PA patients (4%) died within seven days of treatment. Four of 27 placebo/SK treated patients died (15%). All deaths from each group were of cardiogenic origin.

Complications of Therapy

One placebo/SK treated patient had hypotension associated with bleeding around the femoral arteriotomy site used for cardiac catheterization. This responded to volume replacement. One rt-PA treated patient had a catheter-induced femoral artery laceration, causing serious blood loss before its surgical repair. Another rt-PA patient developed signs of a posterior fossa intracranial hemorrhage two days after rt-PA therapy and CABG. The hematoma was successfully evacuated and the patient was discharged without neurologic dysfunction. This event was unlikely related to rt-PA administration since it occurred 48 hours after the rt-PA infusion was discontinued.

Blood transfusions were required in 31% of rt-PA treated patients to assist with CABG or simply to augment hematocrit. Of placebo/SK treated patients, 15% required transfusions for similar indications.

Other non-life threatening complications in rt-PA treated patients included bleeding around the catheter site (63%), epistaxis (7%), GI bleeding (minor or moderate -12%), gingival bleeding (3%), hematuria (microscopic - 54%).

Arrhythmias associated with rt-PA therapy were those otherwise seen during acute MI (PVCs, sinus bradycardic ventricular tachycardia and fibrillation), and were treated successfully in a conventional manner.

Discussion

Short- and long-term survival following myocardial infarction is largely dependent on residual ventricular function. Lysis of intracoronary thrombi by intravenous and intracoronary streptokinase has been shown to be effective in improving both left ventricular function and patient survival. Coronary angioplasty is an alternative strategy for reperfusing vessels that are occluded by thrombus, and has a similar success rate for acute recanalization.

However, PTCA requires immediate accessibility to cardiac catheterization facilities and incurs substantial delay for the time of reperfusion. The treatment of choice will require a modality capable of widespread and immediate application.

Conclusions

Recombinant tissue-type plasminogen activator (rt-PA) has been shown to be an extremely efficacious thrombolytic agent in the early hours of an acute MI. Recanalization occurs in 84% of infarct-related vessels after a 120-minute infusion of rt-PA. Patients treated with rt-PA had only a 4% mortality compared with 15% mortality in patients who did not receive rt-PA. Serious side effects can occur, but are managable by conventional means. After recanalization by a lytic agent such as rt-PA, many patients will require either PTCA or CABG to prevent further myocardial damage caused by re-occlusion of the infarct-related artery. At this time, rt-PA is the most promising means of preventing severe left ventricular damage during acute MI.

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AUTO RACING
Is There a Lesson To Be Learned?



ADULT CRITICAL CARE MEDICINE

Methodist Hospital OF INDIANA, INC.

STEPHEN E. OLVEY, M.D.
Indianapolis

AUTOMOBILE RACING is one of the most popular sports in America. In fact, the Indianapolis 500 mile race boasts an attendance of more than 300,000 people. Often thought of as a highly dangerous sport, Indianapolis-type car racing is, in fact, relatively safe. Injuries do occur, but when one considers the potential result of crashing a car at greater than 200 mph into a concrete barrier, the injury rate is surprisingly low.

In 1986 we published a five-year survey of championship car racing accidents and injuries.[1] In this survey we studied 69 active drivers who participated in the Indianapolis race from 1981 to 1984. The purpose of the survey was to evaluate the frequency and distribution of the accidents and the nature of any resulting injuries.

Findings revealed that lower extremity fractures accounted for 33% of the injuries, with upper extremities injured 27% of the time and head injuries accounting for 10%. Forty-two percent of drivers studied had never been injured. With the exception of one fatality, life-threatening internal injuries, as are so often seen in passenger car accidents, were rare.

In 1984, within the entire 17 race Indy-car circuit, one accident occurred for every 1,414 miles of racing. The number of accidents per injury was 9.5. None of these injuries was life-threatening compared with the national highway injury rate of one injury for every 8.2 accidents, 50% of which are potentially life-threatening.

In 1985, the results were even better, with one injury for every 24.67 accidents (*Table 1*). Only three injuries required hospitalization in 1985 (*Table 2*), and that was after 121,000 miles of competitive racing. How can this be?

TABLE 1
CART Accidents/Injury 1985

# Accidents	74
# Drivers Involved	89
# Injuries	3
24.67 Accidents/Injury	1985
9.5 Accidents/Injury	1984

TABLE 2
CART Injury List 1985

1) Fx Rt. Clavicle Fx Rt. Acetabulum	Drove in 4 weeks
2) Fx Rt. Ankle	Drove in 2 weeks
3) Concussion	Drove in 10 days

Several factors allow racing drivers to enjoy relative safety. The first and foremost is car design. An Indy-car (referred to as championship or Indianapolis-type car) is an open-wheeled, 1500-pound vehicle, 15 feet long, with a rear-mounted engine capable of generating over 700 hp and reaching speeds greater than 230 mph. The cars are constructed of carbon fiber, aluminum, and other exotic metals such as titanium and magnesium.

The driver is restrained by a four-way harness system in a strong, rigid cockpit or tub (*Fig. 1*). The design of

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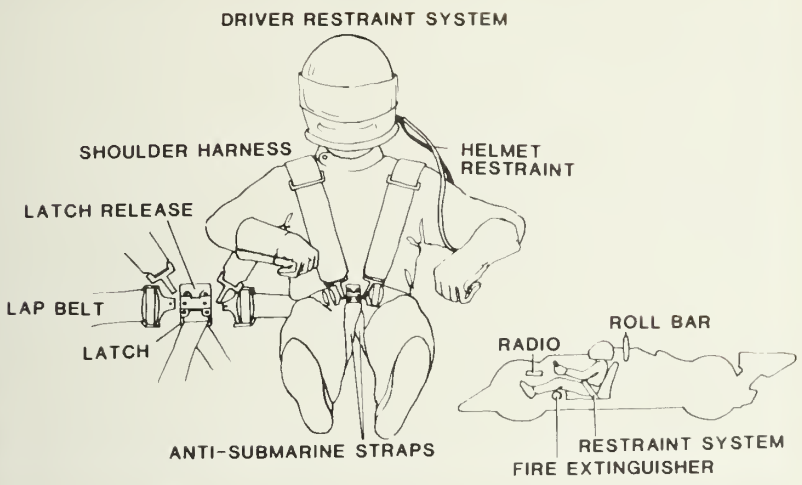


FIGURE 1: Driver restraint system and location of driver within the vehicle.

the car is such that all of the other components are attached to the tub in such a way as to disassemble in the event of a crash, absorbing kinetic energy as they do. This peripheral energy absorption spares the driver who is housed in his protected "cocoon".

The current Indy-car design, in fact, can protect the consciousness of the driver in a 200 mph crash at a near 90-degree angle of impact into a concrete wall. Passenger cars, when similarly crashed by the Department of Transportation, resulted in a greater than 50% chance for fatal injury at speeds of only 30 mph.

In addition to car design, Indy-car racing enjoys an elaborate EMS system. Both Championship Auto Racing Teams (CART) and the United States Auto Club (USAC) insist on a strong medical and safety program.

This system includes rapid on-track vehicles which act as first responders. These vehicles are equipped with state-of-the-art extrication tools, fire fighting apparatus, emergency life-support equipment and are staffed by trained personnel, including a paramedic and an M.D., who are knowledgeable in advanced trauma life support skills.

These vehicles can reach the scene of an accident usually as the car is coming to a stop. This enables a rapid assessment of the driver's airway and restoration of any impaired ventilation. For this reason, hypoxic time is kept to a minimum with the result that there are currently no drivers who have suffered an initial loss of consciousness who are currently neurologically impaired.

Contrast this with similar deceleration injuries in the motorcycle and passenger car patient population. The difference is alarming. Also, by guiding the extrication process no further injury is allowed, and any immediate life-threatening injuries, such as tension pneumothorax, major hemorrhage, or tamponade, are immediately treated. Indeed, if such a system were to exist nationwide the morbidity and mortality from trauma would be reduced substantially.

The rule on the race track is to get the driver out of the car as quickly as possible maintaining C-spine and airway control with transfer immediately to the nearest acceptable tertiary care facility.

Also important to the driver's safety is the equipment worn in competition. This equipment includes a fire-resistant uniform including shoes, gloves, and balaclava, as well as an approved helmet. The uniform and helmet combination will protect the driver from a fire for up to 40 seconds. This allows the fireman ample time to extinguish any fire before serious burns result. In fact, there have been



FIGURE 2: A racing driver prior to the race with full uniform and proper restraint system.



FIGURE 3: Driver Education car in which three of the four occupants were killed and the fourth was severely injured. Note the condition of passenger compartment.

no extensive or deep burns for over seven years. In addition to the above, the driver's head rests firmly against a back support. This position has resulted in no cervical injuries in the last nine years (*Figure 2*).

Another area of importance is the general physical and emotional condition of the drivers. Obtaining a "ride" in an Indianapolis-type car is an extremely competitive pursuit. A driver must demonstrate his or her ability in other, slower forms of competition first. In fact, active drivers currently average more than 15 years of professional racing experience.

Considering the ages of some of the top contenders, this implies racing often begins at a very early age. Also, because of the fierce competition, physical conditioning has become a very important asset for the driver. Racing often requires extreme physical demands, as evidenced by sustained heart rates of greater than 170 beats per minute for up to three hours.

The ability to concentrate for long periods under stress is also important; there are no time outs in an automobile race. Reaction times and the ability to anticipate are important as well. A race car covers 100 yards every second at 190 mph. A racing driver must be able to demonstrate and maintain his athletic ability to retain employment.

What benefit is all of this to society at large? Currently, one has a three times greater chance of being injured in a passenger car crash at 50 mph than one does crashing an Indy-car at 195 mph. Those involved with safety in motor sports feel that this fact represents a problem and perhaps a solution.

The problem resides primarily in the design and construction techniques of the typical passenger car. When one views a passenger car after an accident he is usually impressed by the fact that, with the exception of glass and small parts, the car is still virtually intact, albeit severely contorted (*Figure 3*). When this happens much of the kinetic energy in these crashes is transmitted directly to the occupants who suffer the consequences.

If you were to hold a two-by-four against your forehead and strike the other end with a heavy hammer a significant head injury would result, regardless of the length of the two-by-four. Place energy-absorbing material between you and the end of the board, however, and little if any injury will result. Much can be learned from the race car construction in this regard.

Likewise, many injuries in passenger car accidents are caused by the occupant of the vehicle striking objects inside the car because of the lack of an adequate restraining system. Better shoulder harness and seat belt systems would certainly help, as well as consistent usage by passengers. At highway speeds helmets and fire-retardant clothing are not necessary.

Lastly, trauma needs to be treated in a bona fide trauma center. It should no longer be acceptable to transfer badly injured patients from the scene to an inadequate facility. Time is the enemy in trauma and a safe and rapid transfer to an appropriate hospital will result in greater success. Dedicated, regional trauma systems are necessary to insure proper care.

In summary, a sport that at one time was inherently quite dangerous has now become relatively safe. This improved safety has been the result of an evolution in car design and construction, a concern for the protection of the driver, and the development of an athlete conditioned to anticipate problems and react positively. A dedicated trauma system with skilled personnel is also present in the event an injury occurs. Much that is learned in the laboratory that is the race track can be carried over to other endeavors as well.

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Genitourinary tract infections, including acute prostatitis, caused by *Escherichia coli, P mirabilis,* and *Klebsiella* sp

Note—Culture and susceptibility tests should be initiated prior to and during therapy Renal function studies should be performed when indic

Contraindication: Keflet is contraindicated in patients with known alle to the cephalosporin group of antibiotics.

Warnings: BEFORE CEPHALEXIN THERAPY IS INSTITUTED, CAREFUL INQUIRY SHOULD MADE CONCERNING PREVIOUS HYPERSENSITIVITY REACTIONS TO CEPHALOSPORINS, AN PENICILLIN. CEPHALOSPORIN C DERIVATIVES SHOULD BE GIVEN CAUTIOUSLY TO PENICIL SENSITIVE PATIENTS.

SERIOUS ACUTE HYPERSENSITIVITY REACTIONS MAY REQUIRE EPINEPHRINE AND OTH EMERGENCY MEASURES.

There is some clinical and laboratory evidence of partial cross allergy icity of the penicillins and the cephalosporins. Patients have been report to have had severe reactions (including anaphylaxis) to both drugs.

Any patient who has demonstrated some form of allergy, particularly drugs, should receive antibiotics cautiously No exception should be ma with regard to Keflet

Pseudomembranous colitis has been reported with virtually all broad spectrum antibiotics (including macrolides, semisynthetic penicillins, an cephalosporins); therefore, it is important to consider its diagnosis in patients who develop diarrhea in association with the use of antibiotics Such colitis may range in severity from mild to life threatening

Treatment with broad-spectrum antibiotics alters the normal flora of t colon and may permit overgrowth of clostridia Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of antibioti associated colitis.

Mild cases of pseudomembranous colitis usually respond to drug dis continuance alone. In moderate to severe cases, management should include sigmoidoscopy, appropriate bacteriologic studies, and fluid, ele trolyte, and protein supplementation. When the colitis does not improve after the drug has been discontinued, or when it is severe, oral vancomy is the drug of choice for antibiotic-associated pseudomembranous colit produced by *C difficile.* Other causes of colitis should be ruled out

Usage in Pregnancy—Safety of this product for use during pregnanc has not been established

Precautions: *General*—Patients should be followed carefully so that ar side effects or unusual manifestations of drug idiosyncrasy may be dete If an allergic reaction to Keflet occurs, the drug should be discontinued a the patient treated with the usual agents (eg, epinephrine or other pressc amines, antihistamines, or corticosteroids).

Prolonged use of Keflet may result in the overgrowth of nonsusceptib organisms. Careful observation of the patient is essential. If superinfecti occurs during therapy, appropriate measures should be taken

Positive direct Coombs' tests have been reported during treatment wi the cephalosporin antibiotics. In hematologic studies or in transfusion cross-matching procedures when antiglobulin tests are performed on the minor side or in Coombs' testing of newborns whose mothers have received cephalosporin antibiotics before parturition, it should be recog nized that a positive Coombs' test may be due to the drug

Keflet should be administered with caution in the presence of marked impaired renal function. Under such conditions, careful clinical observati and laboratory studies should be made because safe dosage may be low than that usually recommended

Indicated surgical procedures should be performed in conjunction wi antibiotic therapy

As a result of administration of Keflet, a false positive reaction for glu cose in the urine may occur. This has been observed with Benedict's and Fehling's solutions and also with Clinitest® tablets but not with Tes-Tape® (Glucose Enzymatic Test Strip, USP, Lilly).

Broad-spectrum antibiotics should be prescribed with caution in indiv uals with a history of gastrointestinal disease, particularly colitis.

Usage in Pregnancy—Pregnancy Category B—The daily oral adminis tion of cephalexin to rats in doses of 250 or 500 mg/kg prior to and durin pregnancy, or to rats and mice during the period of organogenesis only, had adverse effect on fertility, fetal viability, fetal weight, or litter size. Note that safety of cephalexin during pregnancy in humans has not been establishe

Cephalexin showed no enhanced toxicity in weanling and newborn rat as compared with adult animals. Nevertheless, because the studies in humans cannot rule out the possibility of harm, Keflet should be used du pregnancy only if clearly needed

Nursing Mothers—The excretion of cephalexin in the milk increased du 4 hours after a 500-mg dose, the drug reached a maximum level of 4 μg/ then decreased gradually, and had disappeared 8 hours after administrati Caution should be exercised when Keflet is administered to a nursing wom

Adverse Reactions: *Gastrointestinal*—Symptoms of pseudomembran ous colitis may appear either during or after antibiotic treatment. Nausea and vomiting have been reported rarely. The most frequent side effect has been diarrhea. It was very rarely severe enough to warrant cessation of therapy. Dyspepsia and abdominal pain have also occurred. As with some penicillins and some other cephalosporins, transient hepatitis and choles tatic jaundice have been reported rarely.

Hypersensitivity—Allergic reactions in the form of rash, urticaria, ang edema, and, rarely, erythema multiforme, Stevens-Johnson Syndrome, or toxic epidermal necrolysis have been observed. These reactions usually s sided upon discontinuation of the drug. Anaphylaxis has also been report

Other reactions have included genital and anal pruritus, genital monilia vaginitis and vaginal discharge, dizziness, fatigue, and headache. Eosino philia, neutropenia, thrombocytopenia, and slight elevations in SGOT and SGPT have been reported.

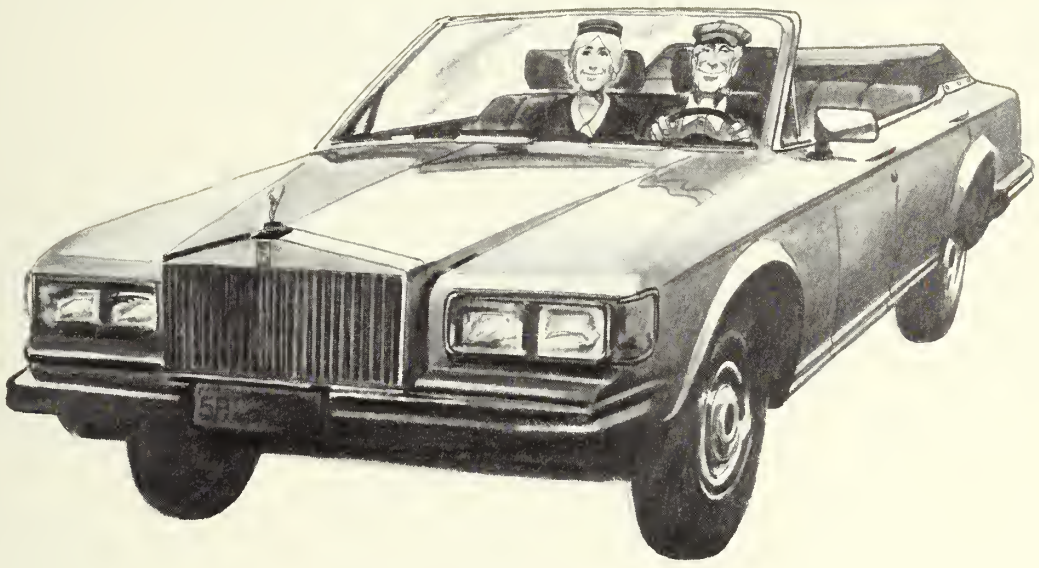
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Role of Antibiotics in the Treatment of Extremity Gunshot Wounds

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Abstract

The basic principles of treatment for gunshot wounds have evolved from military experience. Selective application of these principles in the civilian arena, with small caliber and lower velocity weapons, has produced diverse recommendations for management. The purpose of this study was to examine the efficacy of prophylactic antibiotics in low velocity gunshot wounds to the extremities.

The clinical records of 229 patients with gunshot wounds to the extremities seen in the emergency room of a large urban trauma center over a five-year period were reviewed. Patients with injuries requiring vascular or orthopedic surgical procedures were excluded. One hundred and fifty-two patients (66%) received oral or parenteral antibiotics as part of their initial treatment; 77 (34%) did not. Follow-up data were available in 57% of the patients. The overall infection rate was 5.2%:6.6% in those receiving antibiotics, 2.6% in those who did not; this difference was not statistically significant. Although most infections occurred early, three (25%) were not apparent until two weeks or more after wounding.

Six of the 38 patients with fractures developed infections, as did 10 of the 128 with retained bullet fragments. The incidence of infection for these groups, 15.8% and 7.8% respectively, was significantly higher than for those patients without fractures and without retained fragments, $p < 0.01$ and $p = 0.05$. Analysis of antibiotic efficacy in these subgroups also failed to show any significant benefit.

Patients with gunshot wounds of the extremities who have fractures or retained bullet fragments have a higher incidence of infection than those who do not. Use of systemic antibiotics does not alter this infection rate. This study provides the basis for definition of high risk subgroups in the development of a prospective evaluation examining the role of antibiotics in the management of civilian firearm injuries.

THE BASIC PRINCIPLES of gunshot wound management have been derived from military experience. The high velocity rifles used in the war theater create extensive tissue and organ injury requiring wide exploration and generous debridement. The lower velocity of civilian handguns produces less extensive injury than military firearms and can thus be treated more conservatively. The role of prophylactic antibiotics in the treatment of these low velocity wounds is undetermined. This study was undertaken to determine the efficacy of antibiotics in the prevention of infection in low velocity gunshot wounds to the extremities.

From the Dept. of Surgery, Indiana University School of Medicine, Wishard Memorial Hospital, Indianapolis.

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Materials and Methods

During the five-year period from January 1980 through December 1984, 265 patients with gunshot wounds to the extremities were treated in a large urban trauma center. Thirty-six patients who required acute vascular or orthopedic surgery were excluded from the study. The clinical records of 229 remaining patients were reviewed with special attention given to radiographic findings, antibiotic treatment, follow-up care, and the presence of drainage, fluctuance, erythema, or induration which were considered to represent infection. Statistical comparisons between patient subsets were made using Fisher's exact test.

Results

The average age of the patients was 27.4 years, with a range of 3 to 77 years. There were 211 male patients (92%) and 18 female patients (8%). One hundred and fifty-seven patients were black (69%), 70 were white (30%), and two were Hispanic (1%).

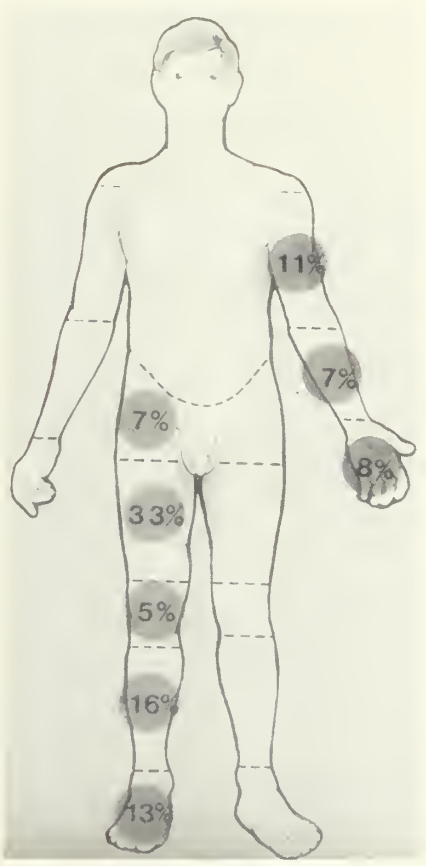
Handguns were the offending weapon in 97% of the cases. The caliber of the handgun was unknown in 55%, while 28% were .22 caliber, and 7% were .38 caliber injuries. Other

handguns used included .357, .32, .30, and .45 caliber weapons. Small caliber rifles were used against 3% of the patients.

By location, 74% of the gunshot wounds were in the lower extremities. The thigh was the most commonly injured area, sustaining 33% of the penetrating wounds (*Figure*). Radiographs of the injured area were done in 227 (99%) patients. One hundred and twenty-eight of the patients (56%) had retained bullets or bullet fragments and 38 patients (17%) sustained fractures. Wound care included irrigation, appropriate tetanus administration and debridement of necrotic tissue.

Oral or parenteral antibiotics were used in 152 (66%) of the patients; the others received no antibiotics. A number of antibiotics, regimens, and schedules were used. Forty-seven percent of the patients treated with antibiotics received oral antibiotics only, while 17% received parenteral antibiotics and 36% received both oral and parenteral antibiotics. Cephalexin was the most commonly used oral antibiotic while Cefazolin and Cephapirin were the most common parenteral antibiotics. Adherence to treatment was indeterminate.

Follow-up data were available in 57% of the patients. Twelve patients developed infections, for an overall rate of 5.2%. Nine of these infections (75%) occurred within two weeks. The remaining infections were noted from three to 14 weeks after being wounded. The incidence of infection in those patients receiving antibiotics was 6.6%, and 2.6% in those who did not (*Table 1*). This difference was not statistically significant, $p > 0.05$.



Anatomical distribution of gunshot wounds

The infection rates for the routes of administration were 10% in those receiving a parenteral-oral combination, 7% in those given oral antibiotics and no infections in those receiving single or short course parenteral antibiotics. Due to the small number of infections and the subjective nature of the selection of the route of administration, no definitive conclusions can be drawn regarding the incidence of infection relating to the route of antibiotic administration.

Ten of the 12 infections occurred in the group of 128 patients who had retained bullets or fragments, for an incidence of 7.8%. Only two infections (2%) were noted in the 99 patients without retained fragments. This difference is significant ($p = 0.05$). Thirty-eight patients sustained fractures and six of these (5.8%) developed infections while only 3% of those without fractures developed infections. This difference is also significant ($p < 0.01$) (*Table 2*).

Analysis of antibiotic usage in patients with fractures or retained fragments showed no antibiotic benefit (*Table 1*). Of the 38 patients with fractures, 33 received antibiotics and five did not. All six infections occurred in the group receiving antibiotics. Of the 128 patients with retained fragments, 96 received antibiotics; and eight (8.3%) of these developed infections. Thirty-two patients with fragments did not receive antibiotics, and two (6.2%) of these patients developed infections. The difference in infection rates of patients with fragments is not significant.

Discussion

The best predictor of the wounding capacity of a bullet, the kinetic energy theory ($E = MV^2$),[1,2] indicates that the velocity of a bullet has the greatest effect in the determination of the amount of energy imparted to the tissues by a missile. In high velocity missile injuries (muzzle velocity greater than 1600 ft/sec), the transfer of this energy to the tissues produces forward and lateral acceleration of tissue particles which expand the wound tract to a

TABLE 1
Antibiotic Efficacy

Patient Group	# of Patients	Treated with Antibiotics	Infections	Percent	No antibiotic Treatment	Infections	Percent
Overall	229	152	10	6.6	77	2	2.6
Retained bullets or fragments	128	96	8	8.3	32	2	6.2
Fractures	38	33	6	18.2	5	0	0

large temporary cavity. The compression, stretching, and shearing caused by this cavitation and resultant pressure wave can cause widespread tissue and organ injury in a large area around the path of the bullet.[2] In contrast, the principal effect of low velocity missiles is the laceration and crushing of the tissues caused by the missile itself.[3-5] There is less kinetic energy transfer to produce motion in the surrounding tissues, thus localizing the injury to the immediate vicinity of the wound tract.

Contamination of all gunshot wounds is assumed, since neither the heat of firing nor the passage through air heat a bullet enough to sterilize it.[6,7] In contrast to high velocity injuries, low velocity wounds, which produce a minimal amount of devitalized tissue for bacteria to flourish upon, can heal with minimal to no debridement[8-10] as bacterial flora do not seem to interfere with healing[11] or clinical outcome.[12]

Our findings show that prophylactic antibiotics do not appear to decrease the incidence of infection in civilian gunshot wounds not requiring surgical correction of vascular or orthopedic injuries. These findings are also suggested by studies that note the ineffectiveness of prophylactic antibiotics in extremity gunshot fractures,[13] superficial gunshot wounds of the chest[14] and simple extremity lacerations[15] (*Table 3*).

All of the late infections occurred in those patients with retained bullets or fragments; coincidental reports in the literature have not established a definitive treatment plan.[9,16]

The association noted between infection and fractures and retained bullets or fragments underscores the importance of basic local wound care techniques. These include cleansing with an antiseptic solution, copious irrigation of the wound tract, administration of tetanous toxoid, ruling out vascular injury, debridement of obviously necrotic tissue and superficial or easily accessible foreign bodies, and appropriate external stabilization of fracture sites. Radiographic examination should be done to identify fractures or retained fragments. The effectiveness of prophylactic antibiotics in preventing infection remains unproven.

TABLE 2
Infection Rates

Patient Group	Number of Patients	Infections	Percent
Overall	229	12	5.2
Retained bullets or fragments	128	10	7.8[1]
Fractures	38	6	15.8[2]

[1]$p = 0.05$
[2]$p < 0.01$

TABLE 3
Reported Antibiotic Efficacy

	Type of Wound	Infections with Antibiotics	Infections without Antibiotics
Howland, et al '73	Gunshot fractures extremities	1/19 = 0.05%	1/53 = 0.02%
Ordog, et al '83	Superficial GSW chest	3/261 = 0.01%	2/96 = 0.02%
Thirlby, et al '83	Simple lacerations extremities	16/129 = 12.4%	14/144 = 9.7%

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Changes and Commitment



Shirley Thompson Khalouf, M.D.
President
Indiana State Medical Association

WE HEAR MUCH about the changes in medicine. For some, change is always a threat; for others, it brings new opportunities. I am not suggesting that we should be enthusiastic about physician DRGs, mandatory assignment or Medicare fee controls that threaten our ability to provide proper care for our patients. However, I would like to suggest that we begin to consider ways for physicians to have positive impact on decisions affecting our medical practices.

We must be part of the change to influence it. Let me give you an example. A couple of months ago, I represented ISMA at a State Senate Health Committee hearing on a bill that would have modified the definition of an allied health profession. I testified in opposition to this bill.

The testimony presented was enough to cast doubt on the merits of the bill, and resulted in ISMA helping to fine tune the legislation.

Testifying gave me insight into the governmental process and how decisions are made. It also reinforced my conviction that when physicians get behind public policy issues, we *can* effect change.

I have heard physicians say they "don't want to get involved in politics." Writing a letter to a member of the Indiana General Assembly or Congress to voice an opinion about a bad piece of legislation is not "getting involved politically." It is exercising a Constitutional right (and responsibility) to participate in lawmaking. Who can anticipate the drawbacks of a particular regulation better than those who will experience it first hand? Our lawmakers won't understand what doctors must face in delivering medical care, unless we tell them.

HOW TO HAVE AN IMPACT ON CHANGES

The importance of participation extends further than just to public policy-making in the state legislature and Congress. It actually begins on the home front, where most issues originate.

Again, it's easy to say, "I work 80 hours a week. I don't have time. . . ." Or, "Why do we need to get involved? We have more important things to be concerned about." Frankly, if we fail to participate, if we fail to communicate our thoughts and opinions, we will continue to be plagued by the mistaken attitude that "doctors don't care."

As physicians we need to take leading roles in issues in our communities. We need only to look in our local newspapers to determine what topics are of concern. Is there a local health-related or even a civic problem for which our county medical societies can help find a solution?

Let me cite some examples of several county medical society projects that have received praise from their communities. Dr. James McCann and the Wabash County Medical Society organized a prenatal clinic for the indigent. In Delaware County the medical society underwrote the cost of an Auxiliary program which was developed to educate school children about the dangers of tobacco. Dr. Nicki Turner has presented the program, which includes costumed characters, slides and a film, to numerous school children.

For the last 10 years in Terre Haute, Dr. Benny Ko and Dr. Timothy Cloonan and their associates have sponsored a Christmas Party for underprivileged children. In southern Indiana, Vanderburgh County physicians took a leading role in opposing a PCB removal plant's location on the Ohio River.

What do any of the activities listed above have to do with our medical practices? They say that doctors do care! They point out to our largest group of health care decision makers, our patients, that doctors are interested in more than just making money.

In short, the ISMA and the county medical societies gain strength through the involvement of physician-members. To put it another way, the benefits we receive from ISMA and our county societies are directly proportional to the commitment we make as individuals.

Let's make sure that when we're asked to serve at the state level, either through calling our legislator, or at home by assisting with a worthwhile civic cause, that we accept the commitment. Only then can we have an impact on change.

Facility, Physician Group Strengthen Continuity of Care for the Elderly

JACK MUSKER, M.A.
CHARLOTTE PRICE, R.N.
Indianapolis

TWO YEARS AGO, the Marion County Healthcare Center, a 375-bed long-term care facility in Indianapolis, established an affiliation with a physician group of internists who are professors of medicine at the Indiana University School of Medicine. At that time, our facility and the physician group were eager to strengthen continuity of care for the elderly as well as provide a setting for university/hospital-based clinicians to become more knowledgeable in the practice of medicine in a long-term care setting. In addition, the physician group was interested in pursuing geriatric research.

Physicians often have initial contact with the elderly in community settings, primarily through wellness clinics located within apartment complexes. If it becomes necessary for hospitalization, the physician coordinates the care of these individuals while in the teaching hospital, maintaining the physician/patient relationship.

Referrals of elderly patients are made from the university hospitals to Marion County Healthcare for short- or long-term rehabilitation, respite care, adult day care services, or chronic long-term care. Utilization of transfers to the acute hospital setting has been greatly reduced by the the daily presence of the internist group. Because the elderly have been identified as the "medicated generation," another concern of the group is that of medication management in the elderly patient. Physicians are assisted in addressing this issue through faculty of Purdue University School of Pharmacy and pharmacy professionals within the university hospitals.

Physician Group's Perspective

Daily contact with the residents and employees at the Marion County Healthcare Center over the past two years has provided a learning experience for Indiana University's general internists. Having had a minimum of hands-on practice within a long-term care facility, very few had any idea what to expect. After all, their perspective was from the acute care aspect and numerous emergency admissions. A deep respect has been established for the professionalism within this facility, as demonstrated by its staff, and the internists have a better understanding of the dynamics and special concerns of elders.

In terms of specifics, the physicians' group now has a better feel for rehabilitation and what it entails. They have come to realize that improving functional status is more than an order for physical therapy evaluation, and that any member of the staff who has contact with a resident is part of the rehabilitation team. In addition, everyone has learned a great deal about the day-to-day care of the patient suffering from dementia, the progression of chronic diseases, the need for prompt evaluation with any change in status, and the inevitability of death.

It has been rewarding to observe the changes throughout the center—buildings have been renovated, resident care units have been refurbished, and the image of Marion Healthcare within the community has been strengthened. The physicians' association with Marion County Healthcare Center has been mutually beneficial in a very progressive, open, and growing environment.

Staff Response

The support and presence of the physician group has increased positive attitudes and cooperation of Marion's staff. Their daily interaction through educational efforts, numerous resources, projected ideas, and information, both formally and informally, has stimulated new facility programming and innovations.

The teaching nursing home concept is becoming a reality at Marion Healthcare. Clinical experience for students in nursing, social services, and clergy is now a part of the educational program. In the near future, the program in progress will expand to include field education in pharmacy, physical and occupational therapies, recreational therapy, and dietary services. Indiana University School of Medicine will offer senior electives for medical students in geriatric medicine as well as electives for residents in the department of medicine. Marion County Healthcare Center will be used for both electives.

Favorable effects resulting from the physician group concept have given Marion a means to deliver excellence

Jack Musker is administrator of the Marion County Healthcare Center in Indianapolis; Charlotte Price, R.N., is the center's director of nursing/medical services.

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in patient care and rehabilitation, and to further develop and enhance the concept of a multidisciplinary geriatric team.

Because of the daily presence in the facility of a member of the physicians' team, residents now have a comfortable relationship with their physicians. Frequent contact with an identifiable physician who wears a white coat and carries a black bag is, in itself, a tangible reflection and provides a feeling of comfort for the resident. On any given morning, a resident will frequently call out, "Hey Doc, let me tell you . . ." and the physician will stop and listen or reach out with a friendly gesture and genuine interest. It is through this simple, uncomplicated communication that relationships begin to thrive, thwarting the feelings of hopelessness present in many long-term care facilities and providing a bond between residents, staff, and physicians, which promotes a milieu of acceptance and security.

To quote Jeffrey C. Darnell, M.D., one of the physicians, "The specialist geriatrician's unique role is in disseminating the encouraging word while dispelling the daunting caricature of the elderly with enthusiasm, common sense, and hopeful optimism."

Class of '42 Alumnus Wants Well-Padded Chairs at Reunion

What follows is a tongue-in-cheek letter sent by Dr. Philip Ball of Muncie to Dr. J. E. Holman Jr. and Dr. W. K. Patterson, coordinators of the Indiana University School of Medicine's Class of 1942 reunion. The reunion will be held in conjunction with the annual Medical Alumni Day on May 20.

Dear Jerry and/or Bill:

I have forwarded my check for our 45th anniversary dinner, and I am looking forward to it with great anticipation.

Please see to it that the dinner will not offend my dietary necessities. I am on a low sodium, low sugar, low fat, low calorie, low spice, low taste, low sulfite, low residue diet.

Also please see that the chairs provided are well padded. I have had extensive trouble with terminal hemorrhoids, pruritis ani, and rectal prolapse.

Also please see that the air system is functioning. I require a temperature between 72° and 73° F. The humidity must be in the range of 40%. There must be no pollution with smoke, acroleins, formaldehydes, ozones, sulphur fractions, male perfumes or kerosenes. Female perfumes are acceptable.

Also please be sure that the sound system is adequate. I went slightly deaf during the Woodstock rock concert a few years ago.

Also, please ask all the speakers to speak slowly, using short words, and very simple syntax, as several of my neurones dropped dead last year.

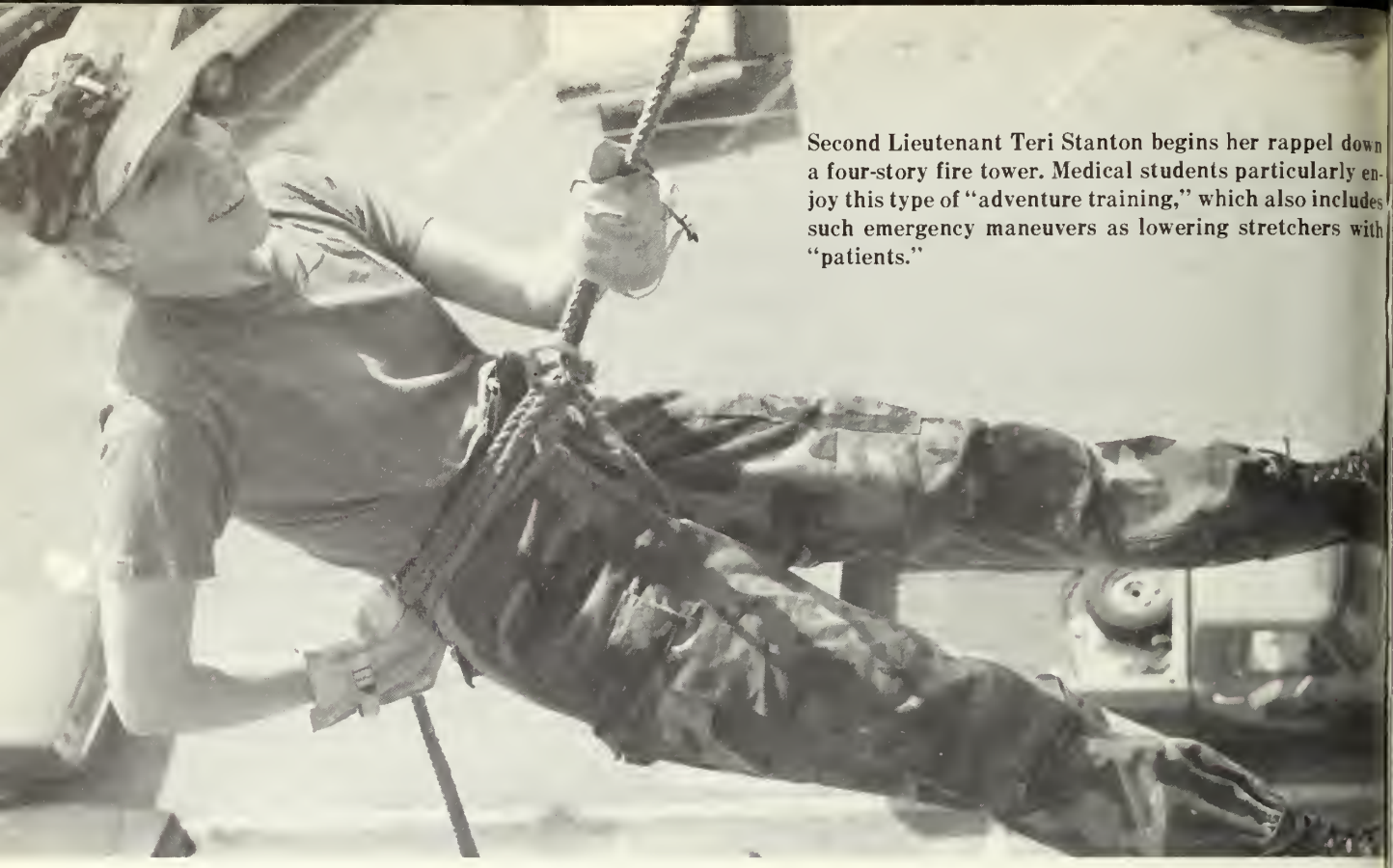
Also please make an announcement before the meeting about the use of profanity, obscenity and rough or crude language and filthy jokes. My wife is an Irish Quaker, and finds this upsetting. Personally, I am an excommunicated Presbyterian, and sort of like this kind of talk, but I have to keep peace in the family.

Also please see that an adequate supply of Boodle's gin for the making of martinis is available at the cash bar. I have become deathly ill from drinking inferior gin.

Also would it be possible for someone to make a one minute medical presentation, so that I can deduct the entire evening? Perhaps a sex subject would be best.

Will a urologist be available? I sometimes get urinary retention if the speakers are too long winded or boring.—**Philip Ball, M.D., Muncie**

P.S. I have lost the invitation, and I can't remember who Jerry and Bill are. I think probably it was the ORAL ROBERTS FAN CLUB that I belong to. Please Jerry and Bill, let me know what group is having the anniversary dinner, and also send me pictures of yourselves with your names on the back in large block letters. I'll have to close now as the nurse is here with my next dose of medicine.



Second Lieutenant Teri Stanton begins her rappel down a four-story fire tower. Medical students particularly enjoy this type of "adventure training," which also includes such emergency maneuvers as lowering stretchers with "patients."

Indiana's Medical Officer Training Corps: A Unique Solution

MAJOR KAY K. HALLANGER
ROBERT B. STONEHILL, M.D.

Major Hallanger, a member of the Indiana Army National Guard Medical Service Corps, is coordinator of the Medical Officer Training Corps, Indiana University School of Medicine. Dr. Stonehill, who is the MOTC director, is a Professor of Medicine, Indiana University School of Medicine.

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BY WORKING TOGETHER, the Indiana University School of Medicine (IUSM) and the Indiana National Guard have developed a unique and successful program to overcome the shortage of physicians in the Guard.

A shortage of physicians in the armed forces during peacetime seems to be a constant problem. The reserve components not only suffer from too many vacancies but also from an inadequate number of physicians trained in the specialties most needed by the military, such as surgery and emergency medicine.

In the post-Vietnam era, the Indiana National Guard was concerned about the aging of physicians then serving, many of whom were World War II and Korean War veterans, and the dearth of young physicians taking their place. There was concern about the reserve component physicians' ability to withstand the physical rigors of war-time service. And, because of the physician shortage, the Guard's ability to deliver health care to its own members, as well as to the citizens of the state during emergency call-ups, was compromised.

With these concerns in mind, then-Governor Otis R. Bowen met in 1980 with Dr. Steven C. Beering, then-dean of the I.U. School of Medicine, and Major General Alfred F. Ahner, who was then the Indiana adjutant general. That meeting eventually led to the development of a program to attract medical students into the National Guard by offering them medical training that would enhance their medical school curriculum. The program was developed by Dr. John E. Jesseph, who was then chairman of the Department



Second Lieutenant David Wilmot rappels down the side of the Student Union Building on the I.U. Medical Center campus. This is the Australian method of military rappelling (frontward, with one hand free).



Mark Bradley, now a resident at Methodist Hospital in Indianapolis, treats a "burn victim" during a mass casualty exercise at the Medical Center. The exercise was planned and conducted by members of the Medical Officer Training Corps for the freshmen medical students at the Indianapolis campus. Dr. Bradley is a captain in the Indiana Army National Guard.

of Surgery at IUSM.

Heeding the call for physicians to join the Guard, Dr. Jesseph, a former combat Marine, was appointed a colonel in the Army National Guard. He found that regulations permitted the commissioning of medical students in both the Air and Army National Guard; however, such provisions were not being used extensively nationwide—not at all in Indiana. Most states also had a physician shortage but were reluctant to have unsupervised medical students in their military units. Giving such students unrelated non-medical military assignments to fill their time requirements was equally unpopular, particularly with the students.

Colonel Jesseph, who also served on the faculty advisory committee of the Indiana University-Purdue University at Indianapolis ROTC program, saw aspects of the Reserve Officer Training Corps program that, if properly modified, could serve as a model for medical students.

He visualized a program located at the I.U. Medical Center that would develop group cohesiveness and professional affiliation. With all students going through the same training, each graduate would be able to perform at a pre-determined level with regard to military knowledge and skills. An on-campus program, he believed, would have more credibility to prospective members than an entirely separate program. Support from IUSM would be critical to the program's success.

Although negative attitudes toward

the military had been subsiding since the end of the Vietnam War, there was still considerable reluctance on the part of many students to assume a military obligation in addition to the many other responsibilities inherent in their career choice.

With the leadership of Dr. Beering, himself a veteran of several years in the military, support for the program and the establishment of a campus office did occur. Because ROTC was the model, the new medical student program was named the Medical Officer Training Corps, or MOTC.

Unfortunately, in the spring of 1982, just as the first students were being recruited into the program, Colonel Jesseph died after a short illness. But before his death, he had been able to establish standards and policies, as well as program promotions, that assured the program's continuation.

That summer nine students were commissioned as second lieutenants, eight in the Army Guard and one in the Air Guard. Since the program was experimental, the number participating was held at nine to see if they could, in fact, meet their military obligations without a negative impact on their medical studies.

In less than one year it was apparent that a well designed program could meet that objective. It also became increasingly apparent that the students were gaining valuable medical and leadership experiences through their participation in Guard activities.

With the loss of the MOTC director, Dr. Beering, in consultation with MajGen Ahner, appointed Dr. Robert B. Stonehill, professor of medicine and a retired Air Force colonel, as the new director.

Dr. Beering had the unique opportunity to appoint a former teacher of his own to the position, Dr. Stonehill having been Dr. Beering's supervisor during his residency while both were serving with the Air Force. With Dr. Stonehill's more than 20 years in service, he brought to the program a network of former colleagues who could be called upon to support the program in a variety of ways. Dr. Stonehill continued his teaching and clinical responsibilities at the Medical Center, accepting this part-time appointment as a public service commitment.



Second Lieutenant Michael Boyer measures intraocular tension on a Guardsman undergoing a physical examination. An advantage of MOTC membership is the exposure to early patient contact. During a typical weekend, the students assist with 75 physical examinations.

The National Guard recognized the need for a full-time administrator to handle the daily responsibilities and future expansion of the program. In the fall of 1983 Major Kay K. Hallanger, a former ROTC instructor, was assigned to the MOTC program. Upon her arrival, an MOTC office was established at the Medical Center. This assured more visibility for the program, both in numbers of students and the training activities that took place.

The MOTC program has been developed with the following objectives:

- Participation in the MOTC cannot interfere with a student's major goal, completion of medical school;
- Participation in the MOTC should enhance medical education and leadership development;
- The program will graduate young, physically capable physicians who have attained a base level of military knowledge and skills and are thereby capable of participating in strenuous field or combat activities.
- Participation in a campus-based program will develop *esprit de corps* and a professional association among the students that they will carry to their assignments upon graduation, thereby enhancing their usefulness to, and retention by, the National Guard.

When a medical student becomes a member of the MOTC, and is commissioned a second lieutenant in either the Army or Air National Guard, he/she attends an orientation program conducted on campus. The agenda is very similar to that given to physicians who enter active duty: who and when to salute, how to wear uniforms, how the military is organized, and where the medical operation fits into the mission of the services.

By the end of the orientation phase, the medical student has learned the equivalent of the first two years of ROTC, to include map reading and land navigation. Later in the MOTC program, students participate in overnight exercises where they learn to bivouac, operate military radios, set up a perimeter defense to protect their patients, and function medically in a simulated combat environment.

In addition to their military skills, the students have many opportunities to assist with physical examinations under a physician's supervision. Not only does this provide a great service to the National Guard, but it allows the students to refine their examining techniques.

The students gain leadership experience by assuming responsibility for various projects such as setting up to do physical exams in an armory or sponsoring an on-campus activity. They must get involved in planning, scheduling, logistics and follow-up.

There is never a lack of project leaders among the MOTC students. Many were involved in a leadership role in high school or undergraduate years but have not used their abilities while in medical school. They seem to welcome the chance to be in a leadership role again. Those who are unaccustomed to being in a leadership position are gently moved in that direction. Every other year a leadership workshop is conducted. Invited guest speakers include physicians who have accepted leadership roles within their community and/or profession.

To maintain the required flexibility for the program's success, several activities are offered each month, mostly on weekends. From this list, students select what will fit into their schedules. A few times each year there are mandatory activities, such as the leadership workshop and weapons training. Once the students graduate and are assigned to a unit, they will be governed more by the unit's schedule and requirements.

The diverse activities that are offered through the MOTC allow the students to experience the National Guard on a broader scale than what is possible through a unit assignment. All the Army Guard students have worked at the Air National Guard facility in Fort Wayne and the Air Guard students have gone on Army field exercises. Both groups have worked with non-medical units, thereby learning about the other branches, such as Infantry, Armor, and Engineer, which has expanded their general knowledge of the military.

When Colonel Jesseph entered the Guard in 1980 there were three physicians in the Indiana Army National Guard, representing less than 10% of filled vacancies. While the Air Guard physician strength was much better, later a series of retirements and transfers left them with several vacancies. Today's Indiana Guard is in much better shape. Some practicing physicians have joined the Guard. And, though the MOTC program has graduated only three classes, its graduates represent half of the Indiana Army Guard physician strength, in spite of losing seven graduates to out-of-state residencies. Also of importance is that this influx of young, physically capable physicians has lowered the average age from late forties to early thirties.



Second Lieutenant David Wilmot conducts a class on the use of a military radio. During annual field training, each student is responsible for a portion of the instruction, which includes map reading, patrolling and weapons training. Taking part in the radio class were (from left) Second Lieutenants William Stang, Gregory Maupin, Teri Stanton, John Wilson and Michael Boyer.

In each of the first two years the MOTC program graduated five officers. The strength of the program can be demonstrated by the size of last year's graduating class of 10. Plans are to graduate about eight Army Guard and two Air Guard medical officers each year. Those taking residencies in other states are transferred to the Guard in their new state and thereby help to alleviate the medical officer shortage nationwide.

While other states have started to use the procedures available for medical student entry into the Guard, no other state has developed a training program which insures that specified military skills and knowledge will be taught to the prospective medical officer. The students in the MOTC program usually join the Guard during their third year of medical school, which gives them almost two years of preparation for their military assignment in the Guard.

By increasing the number of physicians now in the Guard, the MOTC has contributed to the availability of medical services provided to the soldiers and airmen in Indiana and the preparedness of the Guard to provide medical support to Indiana citizens in the event of natural disasters. All indications are that the program's objectives are being met. The *esprit de corps* and group cohesiveness are best demonstrated by the fact that the students in the program are our best recruiters. Most students who have entered the MOTC have done so on the recommendations of a friend in the program.

Indiana's Economy at Risk in Acid Rain Legislation

JOHN W. WALLS
President
Indiana Chamber of Commerce

THE THREAT CONTINUES—and may worsen—on an issue which could cost Indiana millions of dollars and thousands of jobs.

The issue is called "acid rain," and there are two unanswered questions: "Who is responsible?" and "What, if anything, should be done about it?"

Midwestern manufacturers and utilities have been accused by political and environmental leaders in the northeastern states and Canada of adding acidic elements (sulphur dioxide) to the rain-producing cloud cover drifting generally north and east from Midwestern locations.

The claim is that some precipitation from those clouds harms natural resources such as forests and kills the fish in the lakes. The accusers want a federal mandate to eliminate all or most of the sulphur emissions from Midwest industrial facilities.

Although the acid rain issue appeals more to regional than to partisan leadership, the new 100th Congress will doubtless heat up the discussion of legislation. The former HR 4567, a far-reaching and costly example, was aimed at mandating control of acid precipitation by forcing installation of enormously expensive new equipment.

The measure was co-sponsored in the last Congress by 160 House members. It would hit Midwestern economies hard and its contents continue to be strongly supported by proponents, including newspapers and TV stations in northeastern cities.

If passed, this type of legislation would inflict economic hardships on Indiana's utilities, consumers and employees. It would have a dramatic negative effect on economic development efforts in our state.

Scientific evidence does not support a conclusion that acid rain in the U.S. Northeast and Canada is directly attributable to the burning of high-sulphur coal by Midwestern utilities. Would a reduction of sulphur dioxide emissions alleviate the acidic content in Northeastern lakes and forests? There's no proof that it would—only speculation.

All rain is acidic to some extent, regardless of location, and costly control measures wouldn't help that situation. The scientific community is not in agreement about the real sources of the problem, nor the solutions.

There is strong reason to agree with Lee Thomas, head of the Environmental Protection Agency, who believes that further research is necessary before laws are passed which injure the economic well-being of the nation.

Indiana's Gov. Robert Orr has expressed concern about the effect of acid rain legislation on the Indiana economy. He said such controls could increase utility rates by 25 percent or more and cost thousands of jobs in mining and related industries.

Indiana industry leaders and the Orr administration say that if a problem exists it is a national one, and not an expense to be borne primarily by the Midwest.

One of the most thorough discussions on the subject of acid deposition was written by Dixie Lee Ray, former chairman of the Atomic Energy Commission and former governor of the state of Washington.

In the January 1987 issue of *The American Spectator*, Ms. Ray (now a member of the National Advisory Committee on Oceans and Atmosphere) discusses the historic perspective and future implications of controlling legislation. In the article, she makes certain salient points.

- Ozone may be the real culprit.
- Volcanic activity (and other natural sources of acidity, such as lightning) should be considered as much as man-made sources.
- Some of the areas afflicted by high acidic deposits are remote from, and could not possibly have been affected by, industrial sources.
- Some soils, particularly in the Northeast U.S., are naturally more acidic, and any harm to forests and lakes in this region may have evolved over many years.
- It is far from conclusive that a Midwest reduction of 50 percent in sulphur dioxide discharge from factories and utilities would significantly reduce environmental problems attributed to acid rain in the Northeast.
- Local pollution sources primarily account for local acid rain.

Ms. Ray posed the question: Is enough known about acid precipitation to warrant the spending of billions of dollars on supposed corrective measures?

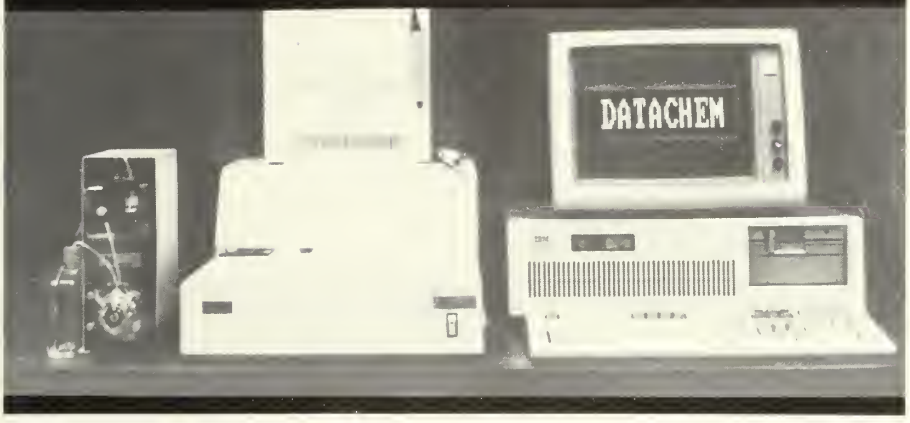
She thinks not, and concludes her article by quoting from testimony given by Department of Energy Secretary John Herrington before Congress in mid-1986: "There is not evidence to suggest that the problem (of acid rain) is urgent or getting worse."

We concur with Gov. Orr, Ms. Ray and Secretary Herrington. We will continue to support research while opposing the imposition of controls that no one has proved will solve the problem.

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Tips for Safety in the Water

FOR MANY OF US, summer wouldn't be summer without swimming and other water sports. But these activities can lead to tragedy if you're unfamiliar with water safety precautions. About 7,000 people drown in the U.S. each year, and most of these deaths could have been prevented. We only have room here to outline some of the most basic precautions that can keep you from becoming a statistic. For further information, we suggest that you consult the excellent publications of the American Red Cross.

10 Tips for Safe Swimming

1. Learn to swim well enough so that you can survive in the water in an emergency.
2. Don't swim in unsupervised areas.
3. Don't swim alone, and don't swim when the only other people in the water are nonswimmers. Their presence might seem reassuring, but they would be of little help in an emergency.
4. Know your limitations. Don't overestimate your ability and don't forget that your ability to swim may not be up to par under some circumstances, such as when you are tired or overheated.
5. Don't swim if you've been drinking alcoholic beverages. Alcohol is the underlying cause of many drownings and other accidents, because it impairs both judgment and coordination. Drinking like a fish does not make you one.
6. Stay out of the water during thunderstorms.
7. Don't dive in shallow or unfamiliar waters.
8. Flotation devices can lead to overconfidence. Don't substitute an air mattress, inner tube, or other floating object for swimming ability.
9. Stay a safe distance away from diving boards, platforms, and floats.
10. Don't hyperventilate before swimming underwater. Hyperventilation can cause mental confusion and even blackouts.

10 Safety Tips for Swimming Pool Owners

1. Never permit anyone to swim in your pool alone, and never leave a child unattended in the pool area, even if he or she is not in the water.
2. Make sure that the pool is adequately fenced (many local laws specify that the fence must be at least 4 feet high) and that the gate has a *lock* to prevent children from entering the pool area when no adult is present.
3. Post emergency instructions, emergency telephone numbers, and pool rules.
4. Mark the deep and shallow sections of the pool clearly.
5. Don't allow running, pushing, or horseplay near the pool.
6. Make sure that the water filtration system and chemical treatment of pool water are adequate.
7. Don't allow people to bring bottles, glasses, or sharp objects into the pool area.
8. If you have one of the new transparent solar pool covers, remove it *completely* before using the pool. Uncovering only one part of the pool has led to several accidents in which people surfaced under the cover and drowned.
9. Don't use the telephone if you are in the pool (or the bathtub or shower, for that matter). If you drop the phone in the water, you could get a serious electrical shock. (This warning does not apply to cordless phones.)
10. Read and follow our 10 Tips for Safe Swimming.

8 Safety Tips for Ponds and Swimming Holes

1. Mark off safe swimming areas with buoyed lines.
2. Remove underwater debris, such as bottles and cans, from swimming areas.
3. Don't use areas near steeply sloped banks for swimming.
4. Post warning signs in dangerous areas where people should not swim.
5. Have the water checked and approved by the local health department.
6. Make sure that floats, diving boards, piers, and similar structures are well-built and securely anchored in place.
7. Post emergency instructions, emergency telephone numbers, and rules for the swimming area.
8. Read and follow our 10 Tips for Safe Swimming.

7 Safety Tips for Beaches

1. Swim in areas supervised by lifeguards.
2. Don't leave children unattended, even in areas where lifeguards are on duty.
3. If you get caught in a current, swim with it or diagonally across it until you can get free or call for help. Don't attempt to swim against it.
4. If you want to try a long-distance swim, swim parallel to the shore and close enough to shore so that you can reach it easily.
5. Don't use breakable objects on the beach.
6. Don't strike up conversations with lifeguards (not even the cute ones) or interfere in other ways with their performance of their jobs.
7. Read and follow 10 Tips for Safe Swimming.

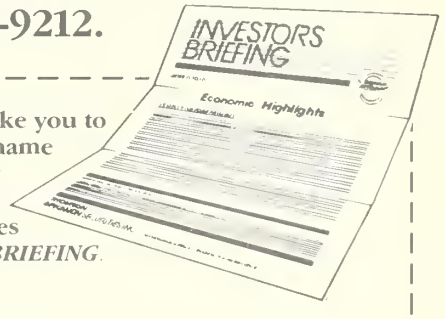
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AUXILIARY REPORT

Anne Throop, Indianapolis
ISMA Auxiliary President 1987-88

"Service is the rent we pay for the space we occupy on earth"—a borrowed motto from another organization to which I belong, because I feel it is in this direction that the medical auxiliary should be headed!

"Our image is what we do"—another quote, this one from the next AMA Auxiliary president, Betty Szewczyk. That statement prompted the decision to embark upon a year of image rebuilding, which in the final analysis will reflect upon the physicians in a positive way. I am proud to have been granted this opportunity to serve the auxiliary as president this next year. My message throughout the year will be for auxilians to become advocates for medicine, to speak out, to be visible. Our goal will be to accomplish this by increased visibility in the legislative area, and by promoting good health habits in our communities.

We pledge our support to the ISMA and the AMA in their efforts to increase the public awareness of the crying need for improvement in the area of adolescent health. The anti-smoking cause will receive our full attention, as will the need for additional public education in the area of seat belt usage, with the Seat Belt Law going into effect July 1.

AMA-ERF and other health projects will receive our support through county fund-raising efforts, such as the sharing cards at Christmas time.

Auxilians are becoming increasingly aware of the need to keep the practice of medicine in the hands of physicians—and we are taking steps to make everyone more knowledgeable, and therefore more effective and interested in working for sound health legislation.

With the help of excellent educational tools available to us through the AMA Auxiliary, there will be a great emphasis put on membership and leadership development, with plans underway for an early membership workshop, a mini-conference for teaching leadership skills, and program planning sessions in each of our three geographical areas. We appeal to the members of the ISMA for continued support in our efforts to make a difference in our communities.

Welcome

Anne Throop, who was born and raised in Oslo, Norway, says she completed her formal education there with "a foreign language major with emphasis on English, plus some German and French." Twenty-eight years ago she decided to spend two years in the United States. The trip brought her to Indianapolis, "which changed the course of my life somewhat." She married Dr. Frank Throop, an Indianapolis orthopedic surgeon, which "blessed me with an 'instant' family of three sons, to which we have added a daughter and another son, ranging in ages from 20 to 33."

Anne has been a member of the Marion County Auxiliary 24 years and is one of its former presidents. She's been extremely active in Auxiliary work, both at the county and state levels. Since 1975, she has served the ISMA Auxiliary as treasurer, recording secretary, parliamentarian, Central Area vice-president, first vice-president and president-elect; she has also handled communications and the Program Book.

Describing herself as a "physical fitness nut," Anne says she likes golf, tennis and skiing, although she's also partial to reading, a little sewing and knitting, and travel—frequently back to Norway. She spends much of her time as an active member of Trinity Episcopal Church, where she is a lay reader and Altar Guide member. She is also a member of the Symphony Women's Committee, Indianapolis Day Nursery, St. Margaret's Guild, Indianapolis Museum of Art and the Indianapolis Civic Theatre.

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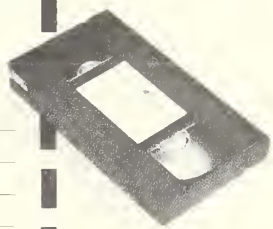
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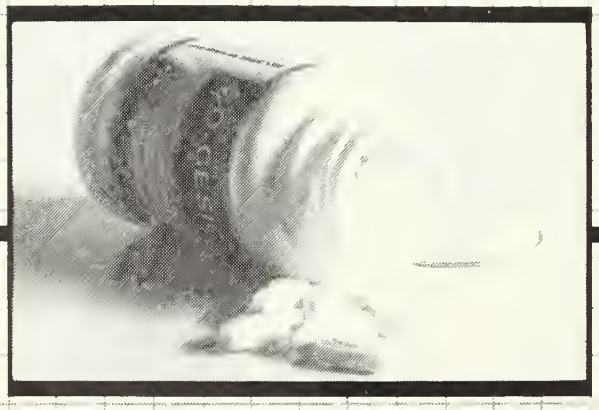
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CME QUIZ

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Practical Oxygen Therapy

CONTINUED FROM PAGES 431-433

1. Oxygen therapy is usually removed from the patient with respiratory failure:
   a. Early in his course of recovery.
   b. Early in the course of his disease's hypoxemic period.
   c. Late in his course of recovery.
   d. At no time during his course of recovery.
2. Which of the following is not included in the categories of high- or low-flow oxygen therapy?
   a. 30% "Venti" mask
   b. 12 l/m "rebreathing" oxygen mask
   c. Pneumatic aerosol nebulizer with 12 l/m O_2 delivering 30%
   d. 6 l/m nasal cannula O_2
3. Which of the following is not a characteristic of high-flow oxygen therapy?
   a. A precise FiO_2
   b. A bulk flow of no greater than 15 l/m
   c. A well-fitted mask
   d. An "oxygen" type mask
4. The minimum bulk flow of oxygen mixture usually required to prevent significant ambient air admixture in a normal 70 Kg. patient is:
   a. 15 l/m
   b. 25 l/m
   c. 40 l/m
   d. 60 l/m
5. If a venturi with a constant powering flow of oxygen is employed to provide to FiO_2 in a high-flow system, the bulk flow:
   a. Varies inversely with the FiO_2.
   b. Varies in parallel with the FiO_2.
   c. Remains constant.
   d. Varies independently of the FiO_2.
6. The typical pneumatic aerosol nebulizer has a maximum possible powering oxygen flow of 12 l/m. At what FiO_2 setting should a double system be considered to maintain the bulk flow?
   a. 30%
   b. 40%
   c. 50%
   d. 60%
7. If an air/O_2 blender with 50 l/m output flow is employed to provide high-flow therapy, the bulk flow:
   a. Varies inversely with the FiO_2.
   b. Varies indirectly with the FiO_2.
   c. Remains constant.
   d. Varies independently of the FiO_2.
8. When using a nasal cannula for low-flow oxygen therapy, the FiO_2
   a. Varies inversely with the minute ventilation.
   b. Varies directly with the minute ventilation.
   c. Remains constant.
   d. Varies independently of the minute ventilation.
9. Which of the following is not a reason to limit nasal cannula oxygen therapy to a maximum of 6 l/m?
   a. The gain in FiO_2 is minimal above that level in normal adults.
   b. In hyperpneic, large patients there is minimal gain in FiO_2.
   c. The high flow of gases causes patient discomfort.
   d. If higher FiO_2's are needed a high-flow system should be considered.
10. A properly applied "venti" mask set for 24% oxygen and powered by 4 l/m of oxygen is:
    a. A low-flow system.
    b. A high-flow system.
    c. A variable system.
    d. A system of undeterminable characteristics.

APRIL CME QUIZ Answers

Following are the answers to the CME quiz that appeared in the April 1987 issue: "Perinatal Infections," by John W. Gaebler, M.D. and Richard L. Schreiner, M.D.

1. c	6. d
2. c	7. b
3. b	8. a
4. b	9. b
5. a	10. d

Answer sheet for Quiz: (Oxygen Therapy)

1. a b c d	6. a b c d
2. a b c d	7. a b c d
3. a b c d	8. a b c d
4. a b c d	9. a b c d
5. a b c d	10. a b c d

I wish to apply for one hour of category 1 AMA Continuing Medical Education credit through the I.U. School of Medicine. I have read the article and answered the quiz on the answer sheet above. I understand that my answer sheet will be graded confidentially, at no cost to me, and that notification of my successful completion of the quiz (80% of the questions answered correctly) will be directed to me for my application for the Physician's Recognition Award of the American Medical Association. I also understand that if I do not answer 80% of the questions correctly, I will not be advised of my score but the answers will be published in the next issue of INDIANA MEDICINE.

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Family physicians may announce office schedules that are reciprocally staggered in order to provide access to evening and weekend and holiday medical service.

In addition to providing benefits to physicians, the *Directory* is a practical means of providing financial support for INDIANA MEDICINE.

All diplomates of the ISMA are invited to enter a professional card in the *Directory*.

NEWS NOTES

FDA Considering New Food Additive That's 600 Times Sweeter Than Sugar

Johnson & Johnson has a new food additive sweetener that's being considered by the FDA.

The generic name is sucralose. It's made from sugar and tastes like sugar—but it's 600 times sweeter. It yields no calories and doesn't promote tooth decay.

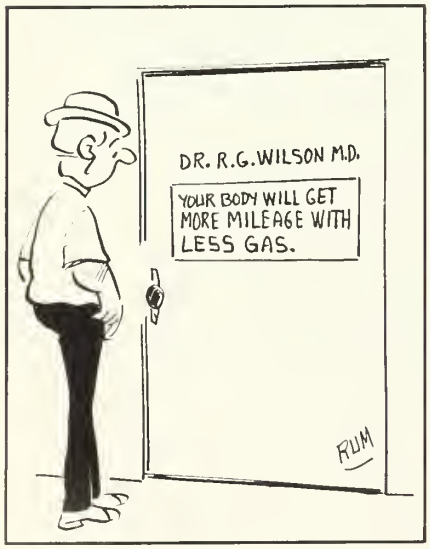
The joint developer, Tate & Lyle PLC, London, the world's largest independent sugar refiner, is seeking approval in Canada, the U.K. and other European countries.

The Johnson & Johnson eight-year safety evaluation shows that the product is safe for human consumption, that it has a high quality of sweetness, and that it is stable in storage for long periods and at elevated temperatures.

Angola Physician Lends Medical Help to Afghans

Dr. John J. Hartman, an Angola, Ind., abdominal surgeon, and seven other American and Canadian physicians in his group have returned from Afghanistan, where they taught 90 young Afghan men how to provide medical care for those injured in the fighting there.

Dr. Hartman and his group went to Afghanistan on a medical mission sponsored by the International Medical Corps, which has headquarters in Los Angeles. In 1966, Dr. Hartman volunteered for a similar humanitarian project in Vietnam, for which he was honored by the President of the United States, the U.S. State Department, the AMA and the ISMA.



Diabetes Experts Conduct Certification Exams

A certification program has been developed by the American Association of Diabetes Educators to test the skills of applicants in teaching diabetics how to manage their disease.

More than 1,200 health care professionals were certified following the first examination, conducted recently in 25 cities. One of the testing centers, in Indianapolis, conducted examinations last month.

Grants Allowed to Help Disabled People

The Robert Wood Johnson Foundation has awarded grants totaling $3.5 million for projects aimed at improving medicine's ability to help disabled or chronically ill people regain or maintain their functional capacities.

The grants will fund five demonstration projects and 12 pilot projects as part of the Foundation's Research and Development Program to Improve Patient Functional Status.

Here and There . . .

Dr. David Kuhaneck of Lawrenceburg has been certified in psychiatry by the American Board of Psychiatry and Neurology.

Drs. John D. Ayres and Michael T. Johnson, who practice in Batesville, have been certified by the American Board of Internal medicine.

Dr. Nancy W. Griffith of New Castle discussed teen pregnancy with a group of New Castle Area Vocational School students in March.

Dr. R. Kelly Chambers of Anderson discussed the social and medical concerns of aging parents during a Women and Health program sponsored by Community Hospital in March.

Dr. David S. Batt of Indianapolis discussed arthritis and its treatment during a March public forum held in Greensburg.

Dr. Bassem Atassi of Merrillville discussed impotence at a March meeting at the Methodist Hospital Southlake Campus.

Dr. A.N. Gandhi of Munster discussed angina pectoris at a public forum held at Community Hospital in March.

Dr. Steven M. Herf of Evansville addressed the Diabetic Support Group at Welborn Baptist Hospital in March.

Dr. Ara A. Dumanian of Hammond discussed advances in heart surgery at the March meeting of the Michigan City Community Mended Hearts Club.

Dr. Robert W. Richey Jr. of Bloomington discussed premenstrual syndrome at a recent meeting sponsored by the Monroe County Extension Homemakers.

Dr. Paul L. Ramsey is now serving the second year of a two-year term as president of the medical staff at St. John's Medical Center, Anderson; Dr. Thomas P. Bright is vice-president, Dr. James R. Drake is chief of staff, and Dr. Phillip E. Goshert is secretary-treasurer.

Dr. Marvin E. Vollmer of Indianapolis has been elected to fellowship in the Clinical Sleep Society, an organization formed by the Association of Sleep Disorders Centers for physicians who specialize in sleep/wake disorders.

Dr. Ronald Hamaker of Indianapolis lectured on mandibular reconstruction during the Oto Mini Series sponsored by the University of Kansas Medical Center in February.

Dr. Jerry L. House of Indianapolis lectured at the recent Colorado Otology-Audiology Workshop in Breckenridge, Colo.; he presented "Results of Multiple Channel Cochlear Implants in Teenage Children" and "Audiologic Finding in Primary CNS Tumors Presenting in the C.P. Angle."

Framers of Health Policy Agenda Release Results of Their 5-Year Effort

A report representing the five-year effort of 172 public and private sector organizations to frame a Health Policy Agenda for the American People (HPA) has been released.

HPA was initiated in 1982 by the AMA Board of Trustees. It included organizations that constitute a broad cross-section of the major stakeholders in health care—the health professions, insurers, hospitals, consumer organizations, business groups, and state and federal government. Its goal has been to develop a common basis for responding to problems before they reach crisis proportions.

The report recommends a series of broad policy initiatives that form a framework for improving health care in the United States into the next century. It contains 195 policy recommendations in all major areas of health care. The recommendations are grouped under seven broad chapters that include:

- Supply, distributing and educating health professionals;
- Providing technology and facilities;
- Organizing health care resources;
- Communicating health information;
- Ensuring quality;
- Paying for health care services; and
- Preparing for the future through research.

The report represents a synthesis of viewpoints derived from disparate positions on issues. The HPA process encouraged participants to discuss issues until a consensus was reached. While in most cases the final result was agreed upon by all, there were times when individual differences were not reconciled. Some participants formally submitted separate views, and these are included in the final report. Regardless of their views on individual recommendations, all participants concurred on the importance of the overall effort.

HPA envisions that the report's recommendations, when implemented, will result in a health care system that assures quality care and balances accessibility, accountability and affordability for patients, payors, providers, government and business.

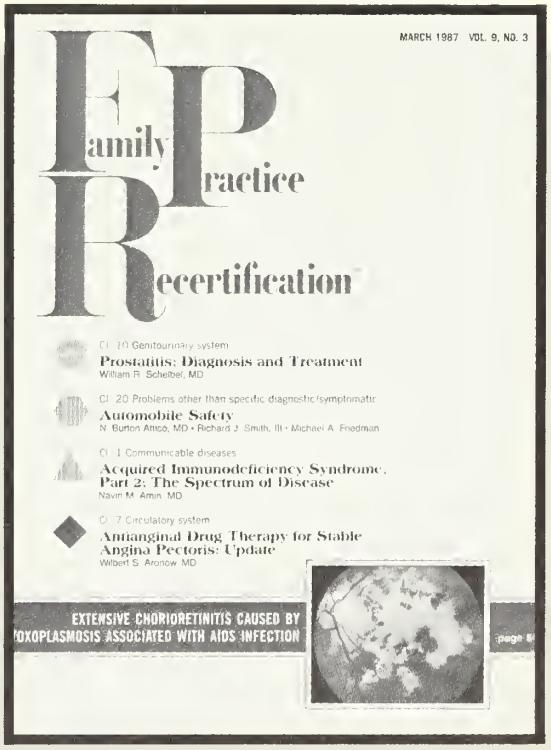
For a copy of the report, call the HPA office in Chicago at (312) 645-4399.

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NEWS NOTES

For the Asking . . .

• "Coffee Update" is a newsletter published by the National Coffee Association. The six-page January 1987 issue features scientific reports dealing with the questions people ask about caffeine, coffee drinking and health. The conclusions are supported by a list of references to several medical publications including *JAMA* and *NEJM*. In summary, the newsletter discusses and offers scientific research and clinical reports to establish the non-association of coffee intake and myocardial infarction, high blood pressure, cholesterol levels, arrhythmias/ventricular premature beats, cancer, cystic disease of the breast, complications of pregnancy, interference with sleep except in hypersensitive individuals, and osteoporosis. Questions, comments or requests for reprints of the research articles (and presumably requests for a copy of the newsletter) may be sent to Coffee Update, National Coffee Association, 120 Wall St., New York, N.Y. 10005.

• Fifty Plus, a consumer-oriented news and feature magazine, is seeking a physician to write interesting, thoughtful and entertaining columns on health topics. The magazine is published in New York and has a circulation of 500,000. Physicians who are interested in submitting writing samples should call Les Lindeman, contributing editor, at (312) 929-4486. To request copies of the publication, write: Fifty Plus, 850 Third Ave., New York, N.Y. 10022.

• The latest issue of "Age Page" (National Institute on Aging) is titled "When You Need a Nursing Home." It devotes four pages to good advice on the subject, including suggestions for seeking local help. Single copies of "Age Page" issues are available free of charge. The address is NIA Information Center, 2209 Distribution Circle, Silver Spring, Md. 20910. Other "Age Page" topics have included Accidents and the Elderly; Arthritis Advice; Be Sensible About Salt; Dealing with Diabetes; Safe Use of Medicines by Older People; and What to Do About Flu.

• Two articles on the heterosexual transmission of AIDS are contained in the January-February 1987 issue of "ACSH News & Views," published by the American Council on Science Health. One article, by Cathy Becker Popescu, gives a general view of the subject as evidenced by worldwide experience. The other, an editorial by Elizabeth M. Whelan, executive director of the Council, says that, of the 28,000 cases of AIDS reported to the Center for Disease Control since the syndrome was first identified in 1981, fewer than 500 have been linked to non-drug-related heterosexual transmission. As of September 1986, in one AIDS hot spot area—San Francisco—only seven of the nearly 2,500 AIDS cases have been classified as heterosexually acquired, the author reported. Copies of "ACSH News & Views" may be ordered from ACSH, 47 Maple St., Summit, N.J. 07901.

• Airco Industrial Gases, Inc. has produced a 30-minute videotape that will help train owners and operators of magnetic resonance imaging (MRI) units to install and replenish MRI cryogens. The cryogens involved are liquid helium and liquid nitrogen, whose function is to maintain extremely low temperatures in the magnetic coils of the instrument. Although the corporation provides one-on-one training for all customers, the number of MRI units makes the videotape useful as a reference tool and for refreshing knowledge of the process. For more information, write the Helium Product Manager, Airco Industrial Gases, 575 Mountain Ave., Murray Hill, N.J. 07974.

• Technical Insights, Inc. has published *Genetic Technologies Source Book: A Guide to R&D Activity*. Billions are spent yearly by the largest corporations and universities on genetic engineering research and development. The book provides essential data not readily available in any organized, concise format. It costs $637. Contact the publisher at P.O. Box 1304, Fort Lee, N.J. 07024—(201) 568-4744.

• The South-Eastern Organ Procurement Foundation has published the initial volume of *Statutory Regulation of Organ Donation in the United States*. The book, which sells for $120, is a thorough compendium of state statutes dealing with organ and tissue donation, transplantation, the Uniform Determination of Death Act, the National Organ Transplant Act, the Uniform

Communicating Is Sharing

Commentary

The criticism is often made of a person on a job or applying for a job, "He can't communicate." And so the person is passed by.

"Communicate" is a big Latin word. What does it mean? Usually the person in question can talk and write. What then is the underlying problem?

I looked up the definitions for this word in an unabridged dictionary. The first definition given was "to share," but an accompanying note said that this definition was archaic. There were other definitions following the first, but none of them really got to the heart of the problem.

Then I studied the etymology or origin of the word "communicate." "Co" is our old friend that means "with" or "together." The next stem was "mundus" that means "gift." And I soon realized that in its Latin origins this word meant "a giving together" or "a sharing."

Here were the nuts and bolts of the word "communicate." Sharing is really wrapped up in the word when we use it, whether we know it or not, and whether some people consider this concept archaic or not.

And so it becomes clear that those who can't succeed because they can't communicate, really can't share themselves.—**Richard J. Noveroske, M.D., Newburgh**

Anatomical Gift Act and "Required Request" legislation. Information is provided state by state. Included in the price of the book is the first year's update, which will contain the most recent legislation passed in each state. Starting next year, updates will be available annually at a nominal cost. Write South-Eastern Organ Procurement Foundation, Richmond, Va. 23228.

• **The newly revised and expanded** 7th edition of *USP DI* (1987) is now available from The United States Pharmacopeial Convention. It is 12% larger than the previous edition. *USP DI* is available from USP for $79.95 for a one-year subscription to the two-volume set. Volume I, "Drug Information for the Health Care Provider," is available separately for $59.95. Volume II, "Advice for the Patient," is $29.95. All subscriptions include bimonthly updates. The address is: 12601 Twinbrook Parkway, Rockville, Md. 20852.

• **"How to Handle a New Car Under Tax Reform"** is the title of the lead article in "The Physician's Advisory" for April 1987. Included in the advice: The 1986 Tax Reform Act provides good reasons for corporate ownership and maintenance of the physician's automobile. Single issues of the "Advisory" cost $15. The subscription price for 12 issues (one year) is $120. The address is 400 GSB Barclay Bldg., One Belmont Ave., Bala Cynwyd, Pa. 19004.

New Medical Exhibits to Open at Chicago Museum

The Chicago Museum of Science and Industry has opened a new exhibit, "The Conquest of Pain." Highlight of the permanent exhibit, presented by the Illinois Society of Anesthesiologists, is an operating room with mannikins and a five-minute video program. Other sections contain graphics, artifacts and question-and-answer units on four subjects related to anesthesia.

Another permanent exhibit—on learning disabilities and the brain—is being developed at the Museum and should be open to the public late this year. The exhibit, first of its kind, will explore the functions of the human brain, how it changes as it learns, and how deficiencies in these processes produce learning disabilities. The exhibit is being made possible by a major gift from the J. Ira and Nicki Harris Foundation and the Pritzker Family.

Michigan Takes Action on Liability Rate Hikes

MEDIGRAM, the weekly newsletter of the Michigan State Medical Society, reports that administrative and legislative investigations are being conducted to improve the malpractice situation in Michigan.

MSMS has written Governor Blanchard to approve the report by his fact-finder, Robben Fleming. The report states, in part, that "medical malpractice cases have edged over into the medical mal-occurrence category so that recovery is granted where neither intent nor negligence is shown. If this is desirable social policy, and it may be, then we ought to deal with it through an entirely different insurance system not chargeable just to the medical personnel or to the individuals involved."

'The Complete Physician'

Letter to the Editor

I have read the article, "The Complete Physician," by the late Dr. Paul S. Rhoads in the March issue of INDIANA MEDICINE. I agree with you that it is a most excellent essay. It addresses the present serious malaise affecting the medical profession, analyzes it, and points the way toward solution. It expresses many thoughts and maxims which should be valuable not only on a currently timely basis but perennially.

It is refreshing to learn of a physician who continued to work and think effectively well beyond the age so generally accepted nowadays as the time to retire. His current article should be "required reading" for all doctors.—**Kenneth R. Woolling, M.D., Indianapolis**

Physician Recognition Awards

The following ISMA physicians are recent recipients of the AMA's Physician Recognition Award. This award is official documentation of Continuing Medical Education hours earned, and is acceptable proof in most states requiring CME in re-registration that the mandatory hours of CME have been accomplished.

Angel, Virgil E., Highland
Branco, Arthur M., Munster
De La Cotera, Frederick G., Munster
Fiscus, Clifford W., Indianapolis
Graham, James C., Fort Wayne
Hakami, Mohamed T., Vincennes
Jacoby, Michael, Logansport
Jeha, Mikhail F., Crown Point
Kilgore, Byron W., Fort Wayne
Lambertus, John, Terre Haute
Lee, Robert Y., Valparaiso
Losch, Christian J., Elkhart
Masbaum, Ned P., Indianapolis
Moore, William G., LaPorte
Perry, Guy F., Indianapolis
Priddy, Marvin E., Fort Wayne
Riley, Henry S., Madison
Simonsen, Thomas E., Fort Wayne
Sun, Chen T., Hebron
Thurston, John B., Indianapolis
Tucker, Donald T., Gary
Villa, Florencio C., Union City
Waksman, Alberto, Bluffton
Wanner, Loren J., Bluffton

NEWS NOTES

New ISMA Members

John C. Allega, M.D., Evansville, internal medicine.

John A. Azevedo, M.D., Indianapolis, cardiovascular diseases.

Mark P. Beckerman, M.D., Carmel, family practice.

Edward E. Bell, M.D., New Albany, orthopedic surgery.

Noaman N. Botros, M.D., Terre Haute, general surgery.

Patrick D.V. Bourdillon, M.D., Indianapolis, cardiovascular diseases.

Stephen J. Burns, M.D., Michigan City, orthopedic surgery.

Isa Canavati, M.D., Fort Wayne, neurological surgery.

Chrissa L. Collings, M.D., Indianapolis, pediatrics.

Judith A. Culpepper, M.D., Indianapolis, internal medicine.

Philomena J. Dias, M.D., Indianapolis, adolescent medicine.

J. Brooks Dickerson, M.D., Mulberry, family practice.

Frances D. Dwyer, M.D., South Bend, pediatrics.

Thomas C. Eckert, M.D., Madison, internal medicine.

Victor N. Egwu, M.D., Gary, orthopedic surgery.

Richard E. Eisenhut Jr., M.D., Indianapolis, internal medicine.

James M. Fellows, M.D., Evansville, urological surgery.

James W. Follette, M.D., Evansville, anesthesiology.



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Evan H. Geissler, M.D., Chicago, general practice.

Bapineedu Gondi, M.D., New Albany, cardiovascular diseases.

Corazon S.M. Gregorio, M.D., Greensburg, obstetrics and gynecology.

Elsa M. Haddad, M.D., New Albany, pediatrics.

David Herbstman, M.D., Hammond, internal medicine.

George J. Herr, M.D., LaPorte, neurology.

James D. Kozarek, M.D., Edinburg, family practice.

Beryl W. Langley, M.D., Jeffersonville, child psychiatry.

Oh J. Lee, M.D., Calumet City, internal medicine.

Baroukh E. Levi, M.D., Wilmett, Ill., anesthesiology.

Custodio L. Lim, M.D., Terre Haute, general surgery.

Friedrich C. Luft, M.D., Indianapolis, nephrology.

Joanne K. Martin, M.D., Brookville, family practice.

Larry T. McClure, M.D., Evansville, family practice.

Robert A. McCready, M.D., Indianapolis, cardiovascular surgery.

Hua Meng, M.D., Indianapolis, obstetrics and gynecology.

Cynthia G. Nassim, M.D., Floyds Knobs, pediatrics.

James W. Neel, M.D., Lafayette, cardiovascular diseases.

Steven L. Nelson, M.D., Indianapolis, psychiatry.

Reinaldo F. Pastora, M.D., Evansville, ophthalmology.

Frank W. Peyton Jr., M.D., Indianapolis, radiology.

Frank Piaskowy, D.O., Goshen, emergency medicine.

Fred L. Rasp Jr., M.D., Fort Wayne, pulmonary diseases.

Mark A. Renshaw, M.D., Fort Wayne, ophthalmology.

Rick D. Saier, M.D., Elkhart, internal medicine.

Kiritkumar C. Shah, M.D., Evansville, neurology.

Eric R. Siemers, M.D., Indianapolis, neurology.

Roger E. Sporre, M.D., Fort Wayne, obstetrics and gynecology.

Cholemari V. Sridhar, M.D., Fort Wayne, neonatal-perinatal medicine.

David G. Stricklin, M.D., Evansville, internal medicine.

Carol G. Stull, M.D., Evansville, obstetrics and gynecology.

John D. Stull, M.D., Evansville, pediatrics.

Judith H. Sutton, M.D., Indianapolis, family practice.

Tim E. Taber, M.D., Indianapolis, nephrology.

Donald M. Traeger, M.D., Carmel, internal medicine.

Charles L. Tremaine, M.D., Munster, orthopedic surgery.

Richard A. Wehrenberg, M.D., Fort Wayne, general surgery.

Phillip N. West, M.D., South Bend, thoracic surgery.

Christopher M. Wirsing, M.D., Valparaiso, obstetrics and gynecology.

Michael L. Wyman, M.D., Lafayette, neonatal-perinatal medicine.

George B. Zeiner, M.D., Lafayette, aerospace medicine.

Residents:

Eric A. Adolph, M.D., Indianapolis, internal medicine.

Dwayne C. Adrian, M.D., Muncie, internal medicine.

Lyle Beard, M.D., Louisville, internal medicine.

Mark A. Bernat, M.D., Indianapolis, family practice.

Michael L. Bogan, M.D., Indianapolis, diagnostic radiology.

Clare A. Braun, M.D., Indianapolis, neurology.

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English-Spanish Dictionary of Medical Terms Available

The considerable increase in the number of Spanish-speaking people in the United States is the stimulus for publishing the 5th edition of an old bilingual reference book, *Dictionary of Medical Terms: English-Spanish/Spanish-English.* The revised edition, selling for $55, is available from the Gulf Publishing Company, Houston, Texas.

Smokeless Tobacco Blamed for Gum Disease

The growing use of smokeless tobacco—both snuff and chewing tobacco—by young people has been identified as a serious threat to dental health and a cause of tooth loss.

Dr. Stephen F. Goodman, president of the American Academy of Periodontology, the organization of dentists who specialize in treating gum disease, points out that the smokeless tobacco habit can harm the gums and cause periodontal or gum disease, which is responsible for most adult tooth loss.

"Snuff dipping and tobacco chewing cause gum recession and the degeneration of periodontal or gum tissue," says Dr. Goodman. "In addition, smokeless tobacco can increase plaque and calculus on the teeth. These findings are presented in a report from the U.S. Surgeon General's office, 'The Health Consequences of Using Smokeless Tobacco.' "

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OBITUARIES

Harold E. Ropp, M.D.

Dr. Ropp, 81, a retired New Harmony physician, died Feb. 25 at Welborn Baptist Hospital, Evansville.

He was a 1930 graduate of Indiana University School of Medicine and was an Army Air Force veteran of World War II.

Until he retired two years ago, Dr. Ropp had been New Harmony's only physician for four decades. He was on the medical staffs of Deaconess and Welborn Hospitals. He was a member of the American Academy of Family Physicians and the ISMA Fifty Year Club.

Charles O. Weddle, M.D.

Dr. Weddle, 75, a retired Lebanon physician, died Feb. 22 in Vero Beach, Fla.

He was a 1936 graduate of Indiana University School of Medicine and served as a flight surgeon in World War II.

Dr. Weddle, a member of the American Academy of Family Physicians, retired in 1976, after which he taught second-year students at the I.U. School of Medicine. He was a former chief of staff at Witham Memorial Hospital in Lebanon. He was a past president of the Boone County Medical Society and became a member of the ISMA Fifty Year Club last year.

Paul G. Hill, M.D.

Dr. Hill, 83, a former Cambridge City physician, died March 20 at his home in Eaton, Ohio.

He was a 1927 graduate of Indiana University School of Medicine and was an Army veteran of World War II.

Dr. Hill, a native of Noblesville, retired in 1978 after practicing in Cambridge City 52 years. He moved to Ohio in 1983. He became a member of the ISMA Fifty Year Club in 1977.

Aubrey W. Elsten, M.D.

Dr. Elsten, 76, a retired Anderson general practitioner, died March 12 at his home.

He was a 1935 graduate of Indiana University School of Medicine.

Dr. Elsten practiced in Anderson from 1936 to 1972. He had also served as a physician for General Motors and practiced in Lapel for nearly 10 years. He was a former chief of staff and president of the staff at St. John's Medical Center in Anderson and was a life member of the American Academy of Family Physicians.

George A. Teaboldt, M.D.

Dr. Teaboldt, 55, an Indianapolis psychiatrist, died March 13 at his home.

He was a 1957 graduate of Indiana University School of Medicine.

Dr. Teaboldt, formerly of Peru, was a past medical director of the Muncie Mental Health System. From 1960 to 1975 he was medical director at Logansport State Hospital; since then, he had been employed by Midtown Mental Health Services, Indianapolis.

Willis A. Fromhold, M.D.

Dr. Fromhold, 76, a retired Indianapolis physician, died Feb. 25 at St. Vincent Hospital.

He was a 1938 graduate of Hahnemann Medical College, Philadelphia, and was an Army veteran of World War II.

Dr. Fromhold retired in 1985 after practicing 46 years on Indianapolis' southside.

H. Haskell Ziperman, M.D.

Dr. Ziperman, 71, a former Indianapolis general surgeon, died Feb. 16 in San Antonio, Texas, where he had lived in recent years.

He was a 1941 graduate of Indiana University School of Medicine and was an Army veteran of World War II.

Dr. Ziperman was a retired Army Medical Corps colonel, having served 35 years. He was a diplomate of the American Board of Surgery.

O. Fred Harless, M.D.

Dr. Harless, 68, a retired Monroeville physician, died March 16 at Parkview Memorial Hospital, Fort Wayne.

He was a 1952 graduate of Indiana University School of Medicine and was an Army veteran of World War II.

Dr. Harless, a member of the American Academy of Family Physicians, retired in 1985. He had helped form the Monroeville Emergency Medical Service and had been the EMS medical director since 1976.

Memorials: Indiana Medical Foundation

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INDIANA, NORTH OF INDIANAPOLIS—Immediate part time opportunity in moderate volume emergency department within one hour drive of Indianapolis. Hourly salary with malpractice insurance provided. Please submit resume to Emergency Consultants, Inc., 2240 South Airport Road, Room 20, Traverse City, MI 49684; or call 1-800-253-1795 or in Michigan 1-800-632-3496.

FACULTY POSITION—Indiana University School of Medicine—One faculty position is currently available. Applicant must have completed prerequisite training in Surgery and an accredited residency in Plastic Surgery. Individual should have experience in hand, general, plastic, and reconstructive surgery, and in the management of burn patients. The position will be responsible for patient care, teaching (medical students and residents) and research related to Plastic Surgery. The individual will serve as Chief of Plastic Surgery Services at Wishard Memorial Hospital. Contact in writing: Jay L. Grosfeld, M.D., Chairman, Department of Surgery, Indiana University School of Medicine, 545 Barnhill Drive, EM 244, Indianapolis, IN 46223. Indiana University is an Affirmative Action, Equal Opportunity Employer.

CINCINNATI, OHIO—Physician to take over a well established solo practice in a beautiful small community that is only 30 minutes from downtown Cincinnati. Sale price is favorable and doctor will introduce to patients. The office is located in a beautiful old home with off-street parking. Growth potential for a partnership is excellent. Family practitioners and internists encouraged to call. Phone: (812) 537-4888.

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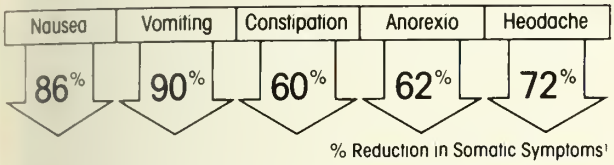
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Significantly faster relief—62% of total four-week improvement evident in first week versus 44% with amitriptyline alone[1]

Dramatic first-week reduction in somatic complaints[2]



% Reduction in Somatic Symptoms[1]

Only ⅓ the dropout rate due to side effects of amitriptyline alone, although the incidence of side effects is similar[1]

Cautian patients about the cambined effects af Limbitrol with alcohol or other CNS depressants and about activities requiring complete mental alertness, such as aperating machinery or driving a car. In general, limit dasage to the lawest effective amount in elderly patients.

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Protect your decision. Write "Do not substitute."

Limbitrol®

Each tablet contains 5 mg chlordiazepoxide and 12.5 mg amitriptyline (as the hydrochloride salt) Ⓒ

Limbitrol® DS

Each tablet contains 10 mg chlordiazepoxide and 25 mg amitriptyline (as the hydrochloride salt) Ⓒ

References: 1. Feighner JP, *et al: Psychopharmacology 61*:217-225, Mar 22, 1979 **2.** Data on file, Hoffmann-La Roche Inc., Nutley, NJ.

Limbitrol® Ⓒ
Tranquilizer—Antidepressant
Before prescribing, please consult complete product information, a summary of which follows:
Indications: Relief af maderate ta severe depressian associated with maderate ta severe anxiety.
Contraindications: Known hypersensitivity ta benzadiazepines ar tricyclic antidepressants. Da nat use with monoamine axidase (MAO) inhibitars ar within 14 days fallawing discantinuatian af MAO inhibitars since hyperpyretic crises, severe canvulsians and deaths have occurred with cancamitant use, then initiate cautiously, gradually increasing dasage until aptimal response is achieved. Cantraindicated during acute recavery phase fallawing myocardial infarctian.
Warnings: Use with great care in patients with history af urinary retentian ar angle-closure glaucama. Severe canstipatian may occur in patients taking tricyclic antidepressants and anticholinergic-type drugs. Clasely supervise cardiavascular patients (Arrhythmias, sinus tachycardia and prolangatian af conductian time reported with use af tricyclic antidepressants, especially high dases. Myocardial infarctian and stroke reported with use at this class af drugs.) Cautian patients about possible combined effects with alcahal and ather CNS depressants and against hazardaus occupatians requiring complete mental alertness (e.g., aperating machinery, driving).

***Usage in Pregnancy:* Use of minor tranquilizers during the first trimester should almost always be avoided because of increased risk of congenital malformations as suggested in several studies. Consider possibility of pregnancy when instituting therapy; advise patients to discuss therapy if they intend to or do become pregnant.**

Since physical and psychalagical dependence ta chlardiazepoxide have been reparted rarely, use cautian in administering Limbitral ta addictian-prane individuals ar thase wha might increase dasage, withdrawal symptams fallawing discantinuatian at either campanent alane have been reparted (nausea, headache and malaise far amitriptyline; symptams [including canvulsians] similar ta thase af barbiturate withdrawal far chlardiazepoxide)
Precautions: Use with cautian in patients with a history af seizures, in hyperthyraid patients ar thase an thyraid medicatian, and in patients with impaired renal ar hepatic functian. Because af the possibility af suicide in depressed patients, da nat permit easy access ta large quantities in these patients. Periadic liver functian tests and blood caunts are recammended during prolanged treatment. Amitriptyline component may block actian at guanethidine ar similar antihypertensives. When tricyclic antidepressants are used concamitantly with cimetidine (Tagamet), clinically significant effects have been reparted involving delayed elimination and increasing steady state cancentratians at the tricyclic drugs. Concomitant use at Limbitral with other psychatropic drugs has nat been evaluated, sedative effects may be additive. Discantinue several days before surgery. Limit cancamitant administratian at ECT ta essential treatment. See Warnings far precautians about pregnancy. Limbitral should nat be taken during the nursing period. Nat recammended in children under 12. In the elderly and debilitated, limit ta smallest effective dosage ta preclude ataxia, aversedatian, cantusian ar anticholinergic effects.
Adverse Reactions: Mast frequently reparted are thase associated with either campanent alane: drowsiness, dry mauth, canstipatian, blurred visian, dizziness and bloating. Less frequently occurring reactians include vivid dreams, impotence, tremar, cantusian and nasal congestian. Many depressive symptams including anarexia, fatigue, weakness, restlessness and lethargy have been reported as side effects at both Limbitral and amitriptyline. Granulocytapenia, jaundice and hepatic dysfunctian have been abserved rarely.
The fallawing list includes adverse reactians nat reported with Limbitral but requiring consideratian because they have been reported with ane ar both campanents ar clasely related drugs:
Cardiovascular: Hypotensian, hypertensian, tachycardia, palpitatians, myocardial infarctian, arrhythmias, heart block, strake.
Psychiatric: Eupharia, apprehensian, poor cancentratian, delusians, hallucinatians, hypamania and increased ar decreased libida.
Neurologic: Incaardinatian, ataxia, numbness, tingling and paresthesias at the extremities, extrapyramidal symptams, syncope, changes in EEG patterns.
Anticholinergic: Disturbance at accammadatian, paralytic ileus, urinary retentian, dilatatian af urinary tract.
Allergic: Skin rash, urticaria, phatasensitizatian, edema at face and tangue, pruritus.
Hematologic: Bane marrow depressian including agranulocytasis, eosinaphilia, purpura, thrambocytapenia.
Gastrointestinal: Nausea, epigastric distress, vamiting, anarexia, stamatitis, peculiar taste, diarrhea, black tangue.
Endocrine: Testicular swelling and gynecamastia in the male, breast enlargement, galactarrhea and minar menstrual irregularities in the female, elevatian and lawering af blood sugar levels, and syndrame at inappropriate ADH (antidiuretic harmane) secretian.
Other: Headache, weight gain ar lass, increased perspiratian, urinary frequency, mydriasis, jaundice, alopecia, parotid swelling.
Overdosage: Immediately hospitalize patient suspected af having taken an overdase. Treatment is symptamatic and supportive. IV administratian at 1 ta 3 mg physastigmine salicylate has been reparted ta reverse the symptams at amitriptyline poisaning. See complete product information far manifestation and treatment.
Dosage: Individualize according ta symptam severity and patient response. Reduce ta smallest effective dasage when satisfactary response is abtained. Larger portian at daily dase may be taken at bedtime. Single *h.s.* dase may suffice far same patients. Lower dasages are recommended far the elderly. Limbitral DS (double strength) Tablets, initial dasage at three ar four tablets daily in divided dases, increased up ta six tablets ar decreased ta two tablets daily as required. Limbitral Tablets, initial dasage at three ar four tablets daily in divided dases, far patients wha da nat tolerate higher dases.
How Supplied: *Double strength (DS) Tablets,* white, film-coated, each containing 10 mg chlordiazepoxide and 25 mg amitriptyline (as the hydrochloride salt), and *Tablets,* blue, film-coated, each containing 5 mg chlordiazepoxide and 12.5 mg amitriptyline (as the hydrochloride salt). Available in bottles at 100 and 500, Tel-E-Dose® packages at 100, Prescriptian Paks at 50.

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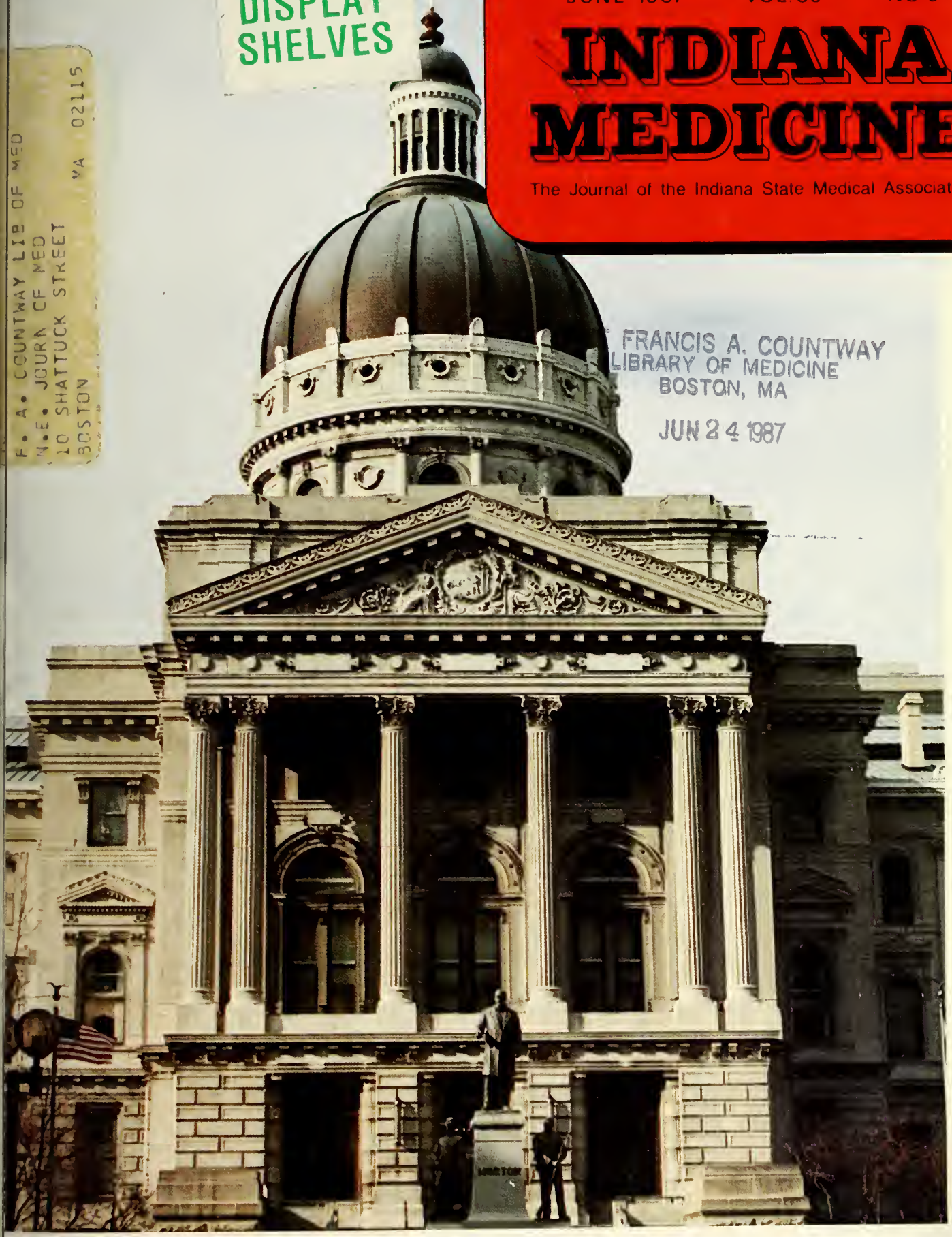
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INSIDE/ A REPORT ON NEW HEALTH-RELATED LAWS IN INDIANA

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Devoted to the interests of the medical profession and public health in Indiana since 1908.

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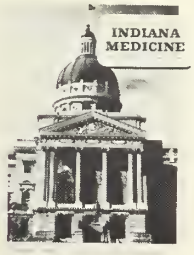
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ABOUT THE COVER

This year's "long session" of the Indiana General Assembly produced a variety of legislation affecting the medical community. Our cover shows the east side of the Indiana State Capitol Building, where the General Assembly meets. For a summary of health-related measures passed by the legislators, see page 560.—PHOTO BY GREG BOWES

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MEDICAL MUSEUM NOTES

CHARLES A. BONSETT, M.D., Indianapolis

ILLUSTRATED ON THIS PAGE is the photograph of Adriel S. Kingsley ("S" for Sylvanus), author of a scathing (to Indiana physicians) little book, *A Bold Arraignment of the Medical Profession for the Practice of False Theories.* The book, consisting of 359 pages (not counting the 52-page preface) was published in 1890 at the author's expense.

The author not only attacks the profession in general, he points his finger at a number of individual physicians in various parts of the state, most them well known, and makes comments that aren't very nice. Not satisfied with one volume, Mr. Kingsley soon turned out a second, entitled *Supplement to Kingsley's Book on Medical Science Frauds.* (The Indiana State Library has copies of both books.)

These books were written when Kingsley was an old man. He had had a large family, some dying in their childhood, as Kingsley came to believe, through the ignorance of the attending physicians. Kingsley then took to treating his own when they became ill, using heroic methods, especially the cold water bath, which he advocated for scarlet fever and diptheria, among others. He lost no more of his children, which he attributed to his own techniques. He publicized his methods, which were shunned by most and criticized by a few.

His cold water treatment consisted of either dipping the patient into a tub of cold water or in sponging the body. Another treatment he described is one used to treat his own aching back: "I received benefit from rubbing camphorated alcohol on my back and then rubbing on coal oil with a brush and heating it by a hot stove."

Among the well known physicians at whom he aimed his barbs were Dr. John Oliver, Dr. William B. Fletcher, Dr. J.W. Harvey, Dr. A.W. Brayton, Dr. Henry Jameson, Dr. George Mears, and even Dr. John Hurty, secretary of the Indiana State Board of Health.

Adriel Kingsley was born in New York in 1818. He moved with his parents to Switzerland County, Indiana, in 1819. Until his 35th year he farmed and taught school in this location. By 1855 he was living in Indianapolis, operating a boarding house. Five years later he established a dairy, and for his industry in this area he became well known and respected.



. . . the author

and his book . . .

A BOLD ARRAIGNMENT

—OF THE—

Medical Profession,

—FOR—

The Practice of False Theories,

False Pretenses, Fraudulent Claims for a False Science, and for Their Determined Purpose to Oppose

THE COLD BATH IN ALL FEVERS,

And for Publishing to the People That It is Not Beneficial, but Hurtful. All for the Purpose of Deluding the People Into Employing Them to Treat the Sick With Their Fraudulent Science, and to Let Them Die.

WITH THE PAPERS ATTACHED OF

DRS. SIMON BARUCH AND G. C. SMYTHE,

Read Before Their Respective Medical Societies, on the Treatment of Typhoid Fever With Cold Water

BY ADRIEL S. KINGSLEY,

INDIANAPOLIS, IND.

Kingsley's store had as its motto, "Honest Milk in Honest Measure Sold Here." He was known as a generous man as well as a successful businessman. Although he was not Catholic, he gave regularly and freely of his milk and dairy products to the indigent under the care of the Little Sisters of the Poor. A good man and an intelligent man, he was askewed in his attitude toward physicians, but not because he was unaware of their activities:

"A year or so ago, at a meeting of the (state) medical society, the members discussed the use of quinine in typhoid fever and agreed that more than 20 grains a day should be given to reduce the temperature, that it was the best agent for the purpose, etc. . . Then Dr. Woolen announced that he was going to New York and would do errands for his medical friends in the way of books or instruments, when Dr. Weatherman suggested he bring back a few new ideas.

"Facetious, wasn't he? But was there not a world of meaning in that suggestion of new ideas? They had been talking of the typhoid fever and, as Dr. Woolen had had a sad experience in a case of that fever a few years before (his brother), which terminated fatally, the thought might have struck him that had he got those new ideas in time that brother could have been saved. Quinine did not save him. (Had his doctor) laid aside his 'code' (of ethics) and put him in a tub of cold water, then he might have saved that brother. . . ."

I am not aware that any physician ever sued Kingsley for slander. He probably would have preferred that to the ridicule he reaped from his critics in the editorial pages of the press.

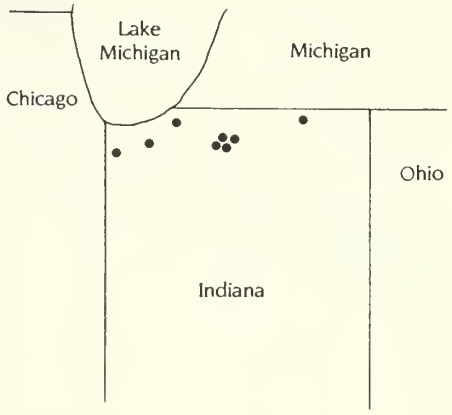
Miss Marybelle Burch, a state librarian who provided this material, comments that ". . . Adriel Kingsley appears to have been a local phenomenon, somewhat like the Central Canal and Lockfield Gardens. A Baptist, a temperance man and a dairyman, he had unbounded confidence in the efficacy of water although the milk of human kindness seems to have curdled under the maligned influence of an acid tongue."

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Meridian has prepared a referral information kit detailing our facilities and services. In it you will find information on how you and your patients' families in the northern Indiana areas served by our eight facilities can take advantage of the many nursing care programs that we offer. This kit is available, without charge, to physicians and hospital administrations. To obtain a copy for your office, please clip and send the coupon below.

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WHAT'S NEW?

News of what is new in the medical supply industry is composed of abstracts from news releases by book publishers and manufacturers of pharmaceuticals, clinical laboratory supplies, instruments and surgical appliances. Each item is published as news and does not necessarily constitute an endorsement of a product or recommendation for its use by INDIANA MEDICINE or by the Indiana State Medical Association.

Ciba-Geigy has FDA approval for marketing the first synthetic human calcitonin. It is especially helpful in the therapy for Paget's disease, which, up to now, has been treated symptomatically. Calcitonin slows the rate of bone resorption and bone turnover. It has no toxic effects on the major organs. The human calcitonin is greatly preferred over calcitonin produced by other animals since non-human calcitonin gradually forms antibodies which may cause the drug to lose its effectiveness.



Stryker has introduced a fully redesigned hydraulically operated Manual ICU Bed. Designed for ease of care, it has strong hydraulics for control, is streamlined for mobility and has an aesthetic, new thermoformed style that contributes to easier maintenance.

Beecham Laboratories announces FDA permission for marketing Augmentin® (amoxicillin, clavulanate potassium) for lower respiratory infections caused by beta lactamase-producing *Branhamella catarrhalis*. *B. catarrhalis* is becoming more prevalent and, because of its elaboration of lactamase, is resistant to penicillins and cephalosporins. Augmentin has been recognized as indicated in otitis media and sinusitis since 1984. It is now FDA-approved for treatment of lower respiratory infections.

Pitney Bowes has introduced its modular model 8308 tabletop inserting system which can provide entry-level mailers with the kind of "one-touch" continuous document processing enjoyed by larger clients. It is introduced for use by medical/dental groups and clinics and other low-volume groups that want to speed billing and other paper-processing functions.

Ciba-Geigy has introduced Ten-K™ (potassium chloride), a 10 mEq potassium supplement formulated with particular emphasis toward compliance. Ten-K is ideally suited for patients who require potassium replacement therapy but have difficulty with liquids or the existing tablet and capsule dosage forms. Ten-K is the only capsule-shaped tablet that can be broken in half or easily crushed by hand and sprinkled on or in food. It also can be administered once a day in a 20 mEq dosage.

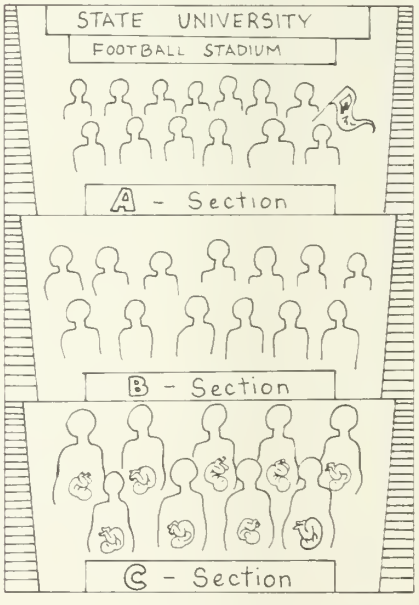
Ciba-Geigy announces FDA approval for marketing a low-dose estradiol skin patch. Applied to the body twice weekly, the patch releases the natural hormone, estradiol, slowly through the skin to the bloodstream, which permits efficacy with extremely low dosages. Estrogen, in pill form, relieves menopausal symptoms, but with possible side effects such as gall stones and hypertension from the effect of estrogen in the larger doses on liver metabolism.

Ciba-Geigy has FDA approval for marketing Lamprene® (clofazimine) for the treatment of leprosy (Hansen's disease). Leprosy is a rare disease in the U.S. It has been increasing, however, by approximately 300 to 400 cases each year due to increased immigration from developing nations. The U.S. estimate is now 4,000, and the worldwide estimate is 12 million. Lamprene has been used outside the U.S. for many years and has been used as an investigational new drug in the Leprosarium at Carville, Louisiana since 1966.

Syntex announces receipt of three new marketing approvals for Naprosyn® . Naprosyn may now be marketed in a liquid suspension form. FDA also granted approval to prescribe Naprosyn, in both suspension and tablet formulations, for treatment of juvenile arthritis. Syntex also has received FDA approval to increase the maximum daily dose from 1,000 milligrams to 1,500 milligrams for use by patients for limited periods of time.

Gower Publishing announces *Current Issues in Clinical Psychology*, the 1985 Annual Merseyside Course in Clinical Psychology. It is edited by Nadine Eisenberg and David Glasgow. The book contains an evaluation of care in the community for mentally handicapped people, a critical look at schizophrenia, and psychotherapy with the borderline patient. 294 pages, $59.50.

Cole Communications has published *Dimensions in Grief: Adjusting to the Death of a Spouse*. The author is a psychiatrist, Stephen R. Shuchter, who is associated with the San Diego Widowhood Project. 360 pages, hardcover, $24.95.



—Michael E. Pauszek, M.D.,
Franklin, Ind.



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FUTURE FILE

ASPEN Meetings

The American Society for Parenteral and Enteral Nutrition (ASPEN) will conduct its annual postgraduate course Sept. 10-11 at the Palmer House, Chicago, The subject will be "Clinical Nutrition Support: A Multidisciplinary Case Management Approach."

ASPEN also announces that its 12th Clinical Congress is scheduled for Jan. 17-20, 1988, at Bally's Hotel, Las Vegas.

For details, write ASPEN, 8605 Cameron St., Suite 500, Silver Spring, Md. 20910.

Indiana University CME

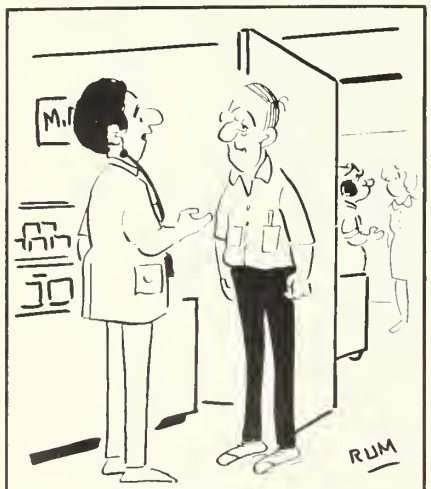
June 17-18: Pediatric Critical Care in Perspective, Sheraton Meridian, Indianapolis.

July 6-15: The Applied Anatomy and Histopathology of the Head and Neck and Temporal Bone, I.U. Medical Center, Indianapolis.

Aug. 5-7: Pan-American Sports Medical Congress XII, Indiana University, Bloomington.

Aug. 27-28: Thyroid and Parathyroid Disease, Lincoln Hotel and University Convention Center, Indianapolis.

For more information on these and other CME programs, contact Melody Dian, Assistant Director, CME, I.U. School of Medicine—(317) 274-8353.



"Why should you want a second opinion—you haven't paid for the first opinion yet!"

The *Journal of the American Medical Association* publishes a list of CME courses for the United States twice yearly. The January listing features courses offered from March through August; the July listing features courses offered from September through February.

Methodist Hospital CME

Sept. 11: Frontiers in Treatment of End-Stage Heart Diseases, Methodist Hospital auditorium, Indianapolis.

Sept. 16-18: Research Design and Medical Biostatistics for the Clinician; co-sponsored by the American College of Physicians; Hilton-on-the Circle, Indianapolis.

Sept. 18-19: Advanced Trauma Life Support Course, Methodist Hospital, Indianapolis.

For more information, contact Dixie Estridge, CME coordinator, Graduate Medical Center, Methodist Hospital of Indiana—(317) 929-3733.

Reception for Residents

An educational program and reception to welcome new resident physicians to the practice of medicine in Indiana will begin at 5 p.m., EST, June 24, in the 5th floor auditorium of Indiana National Bank, One Indiana Square, Indianapolis.

The featured speaker will be Lane Gerber, Ph.D., of Seattle. He will discuss his book, *Married to Their Careers.*

ISMA members are invited to attend and welcome the residents. For reservations, call Sheryl Mahoney at ISMA headquarters.

Newborn Symposium

The 21st Annual Newborn Symposium will be conducted at the Kosair Children's Hospital Auditorium, Louisville, October 15 and 16. Larry N. Cook, M.D., will be the program director. Dr. Cook is Professor and Associate Chairman, Department of Pediatrics, University of Louisville.

Child Advocacy

"Child Advocacy as a New Role for Professionals" is the title of a conference to be conducted Sept. 10-12 at the Concourse Hotel, Madison, Wisc.

The course will be oriented to physicians, lawyers, health professionals and educators. It is accredited for 15 Category 1 hours. The fee for physicians is $250. The conference will address advocacy issues such as child abuse and neglect, joint custody, teenage pregnancy, and termination of parents' rights.

The correspondent is Ann Bailey, WARF Bldg., Room 456, 610 Walnut St., Madison, Wisc. 53705.

Medicine and Religion

"Medicine and Religion: Issues in the Eighties" is the subject of an AMA/AAFP-approved CME course Oct. 20-21 at the University of Kansas Medical Center, Kansas City.

The correspondent is Eileen Buttron, Office of CME, 39th and Rainbow Blvd., Kansas City, Kan. 66103—(913) 588-4480.

Prison Health Care

The 11th National Conference on Correctional Health Care will meet in Chicago November 5 to 7. The National Commission has issued a call for papers for the meeting, to be held at the Palmer House.

For further information write or phone Jodie Manes at 2000 North Racine, Suite 3500, Chicago 60614—(312) 528-0818.

Cardiac Life Support

"Advanced Cardiac Life Support Provider Course" is the title of a CME course Sept. 2 and 3 at the Student Center, Fransisco Lounge at the University of Kansas Medical Center, Kansas City. AMA Category 1 and AAFP credits are rated at 13.5 hours.

The correspondent is David M. Baldwin, Office of CME, 39th and Rainbow Blvd., Kansas City, Kan. 66103—(913) 588-4488.

Nutrition and Disease

"The Role of Nutrition in the Origins of Disease" will be the topic of the seventh annual Bristol-Myers Symposium on Nutrition Research, to be held Sept. 21-22 at the Fairmont Hotel in San Francisco.

Registration information can be obtained from Helen Shaw Miller, Program Coordinator, Office of Continuing Education, University of California, Davis, School of Medicine, 2701 Stockton Blvd., Sacramento, Calif. 95817—(916) 453-4390.

Allergies

"Allergy, Immunology and Rheumatology: Review and Update" is the title of a CME presentation October 9 and 10 at the University of Kansas Medical Center. Credit for AMA Category 1 and AAFP.

The correspondent is Eileen Buttron, U. of K. Medical Center, Office of CME, 39th and Rainbow Blvd., Kansas City, Kansas 66103—(913) 588-4480.

Clinical Cardiology

"Clinical Cardiology 1987: Current and Future Trends in Diagnosis and Therapy" is the title of a CME meeting December 27 to 30 at the Marriott World Center, Orlando, Florida. AMA Category 1 and AAFP credit. An update on current important clinical cardiovascular topics will be presented by national authorities.

The correspondent is Sarah Azlakson, 465B WARF Bldg., 610 Walnut St., Madison, Wisc. 53705—(608) 263-2856.

Critical Care

"Emerging Trends in Critical Care-1987" is the title of a CME conference at the Crowne Plaza Hotel in Orlando, Fla., Oct. 7-9. Fifteen hours CME credit will be awarded.

Write or call Rick Mace, Florida Heart Institute, 500 E. Rollins, Suite 101, Orlando, Fla. 32803—(305) 897-1575.

Organ Transplant

The International Organ Transplant Forum meets in Pittsburgh September 8 to 11. A comprehensive 4-day program featuring the world's leaders in transplantation will be presented.

For full information contact Ann Metzger, International Organ Transplantation Forum, DeSoto at O'Hara Streets, Pittsburgh, Pa. 15213.

Critical Care

A Critical Care Symposium will be conducted at the Inn on the Park, Madison, Wisconsin, September 17 and 18.

It is designed for physicians, nurses and therapists. Credit for AMA Category 1 and AAFP. The program will feature workshops and review sessions for individual specialty needs.

The correspondent is Sarah Azlakson, 465B WARF Bldg., 610 Walnut St., Madison, Wisc. 53705—(608) 263-2856.

Pets and Humans

"Health Benefits of Pets" is the subject of a Technology Assessment Workshop to be conducted September 10 and 11 at the National Institutes of Health in Bethesda, Maryland. The meeting is open to all physicians.

To register for the conference or to obtain additional information contact Ms. Sharon Feldman, Prospect Association, Suite 500, 1801 Rockville Plaza, Rockville, Md. 20852—(301) 468-6555.

Impairment

The AMA National Conference on the Impaired Health Professional will be held October 8 to 11 at the Drake Hotel, Chicago. The major theme will be: "Impaired Health Professionals: Educating Ourselves, Educating Others."

For further information contact Janice J. Robertson, AMA Department of Substance Abuse, 535 N. Dearborn St., Chicago 60610—(312) 645-5083.

Child Abuse

"To Improve the Recognition, Evaluation and Care of Children Suspected of Having Been Sexually Abused" is the subject of a symposium to be held in Kokomo Sept. 22.

Four other such one-day symposiums, accredited for five Category 1 hours, were scheduled in Indiana during April, May and June.

The Kokomo meeting is tentative. Call Dr. Roberta Hibbard at (317) 274-8271 for confirmatory information.

St. Vincent Hospital CME

St. Vincent Hospital and Health Care Center, Indianapolis, announces the following CME programs.

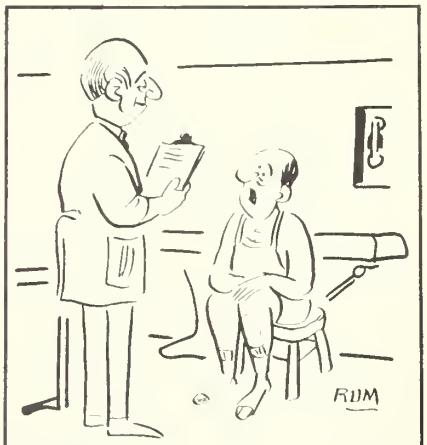
July 7: New Insights into the Causes of MI, James Muller, M.D., Harvard Medical School, St. Vincent Hospital.

Aug. 1-2: Ultrasound Physics Seminar, Cooling Auditorium, St. Vincent Hospital.

Oct. 7: 12th Annual Arthur B. Richter Lectureship in Clinical Cardiology; Thomas N. James, M.D., guest lecturer; Sheraton Marten House.

Oct. 21-23: Intervention in Cardiovascular Disease; David Cumberland, M.D. and Eric Topol, M.D., guest lecturers; Cooling Auditorium, St. Vincent Hospital.

For more information, call Marilyn Soltermann, CME coordinator—(317) 871-3460.



"Give it to me straight Doc—unless it's serious."

CANCER CORNER

WILLIAM M. DUGAN, JR., M.D.
Methodist Hospital Cancer Care Center, Indianapolis

THE ONCOLOGY NURSING SOCIETY (ONS) traces its origin to the first National Cancer Nursing Conference sponsored by the American Nurses' Association and the American Cancer Society. Following this 1973 conference, a small group of nurses met to discuss the need for a national organization for oncology nurses.

In November 1974, a nursing session held at the American Cancer Society/National Cancer Institute national conference on Advances in Cancer Management in New York was attended by 71 nurses. More than 250 interested nurses were identified that year and a newsletter to share information with one another was initiated. The newsletter was the forerunner of the ONCOLOGY NURSING FORUM, the official publication of the Society.

The Society was officially incorporated in 1975, and held its First Annual Congress in Toronto, Canada in 1976. Since the establishment of the Society, local chapters have been formed to provide a network for education and peer support at the local level. The first local ONS chapter was formed in Chicago and was granted its charter in 1980. The Central Indiana chapter of ONS was granted a charter in July 1986. For more information, contact Susan Sturgeon, R.N., or Flossie Taggert, R.N., at (317) 927-5791, 1828 N. Illinois, Indianapolis 46202.

In 1977, ONS became a member of the National Federation for Specialty Nursing Organizations. In 1983, ONS was asked to sit on the American College of Surgeons' Commission on Cancer. Also, in 1984, ONS became the first nursing organization to become a member of the International Union Against Cancer.

The mission of the Oncology Nursing Society is to promote excellence in oncology nursing by: 1. promoting the highest professional standards of oncology nursing; 2. studying, researching and exchanging information, experience and ideas leading to improved oncology nursing; 3. encouraging nurses to specialize in the practice of oncology nursing; 4. fostering the professional development of oncology nurses, individually and collectively; 5. maintaining an organizational structure and function that is responsive to the changing needs of Oncology Nursing Society members.

There are three membership categories. An active membership is open to Registered Nurses, nationally and internationally. A student membership is open to individuals enrolled full-time in a nursing education program leading to eligibility for licensure as a Registered Nurse or Registered Nurse enrolled in a full-time degree program. A sustaining membership is open to organizations, agencies, institutions, corporations or other individuals interested in supporting the ONS.

The ONS provides a network for exchange of information, resources, and peer support. Benefits include: the Society's official journal, the ONCOLOGY NURSING FORUM, and the Society's newsletter, the ONS NEWS; the Annual Congress; reduced fee for Oncology Nursing Certification exam; reduced rates on publications; national and regional educational opportunities; eligibility for membership in local chapters of the ONS for active and student members; Membership, Research and Consultant Directories; group insurance rates; research and travel awards; and reduced dues for eligible students.

For further information regarding membership write: Oncology Nursing Society, 1016 Greentree Road, Pittsburgh, Pa. 15220, or phone (412) 921-7373.

THE JOURNAL OF CANCER PROGRAM MANAGEMENT is a magazine targeted to reach the broad oncology market, and the key oncologists who treat a disproportionately greater share of cancer patients. The broader market includes: Medical Oncologists, Radiation Oncologists, Surgical Oncologists, Oncology Nurses, Cancer Program Administrators and Hospital CEOs who are interested in cancer.

Within this broader market is an important target group—the "heavy user" oncologist. The Association of Community Cancer Centers (ACCC) represents 300 community and university hospitals that treat one of every four cancer patients. Thus, these institutions (3% of U.S. hospitals) manage 25% of all cancer care—the "heavy user" target market.

These oncologists and their institutions have developed cancer programs with oncology units, extensive radiation therapy facilities, cancer data systems, trained oncology nurses, oncology social workers, ambulatory chemotherapy clinics, freestanding cancer centers, and protocol research programs. Many of these institutions have declared oncology a major "product line" and are actively developing its clinical resources, outpatient activities, research efforts, marketing programs, and computer and data capabilities.

The Journal focuses each issue on a specific topic, such as Reimbursement for Inpatient Cancer Care, Outpatient Care and Chemotherapy Reimbursement, Freestanding Cancer Center, Alternative Cancer Care Delivery Systems, Clinical Research in the Community, Cancer DRGs, Cancer Program Marketing, Severity of Illness Measures, and Oncology Practice Management. In addition, each issue brings current news on topics of interest to oncologists and program administrators from Capitol Hill, HCFA, the FDA, the NCI, and from programs around the country.

Individual subscription rates are $40 per year and $60 per year for institutions and libraries. For further information contact: Eileen Cahill, Associate Editor, The Journal of Cancer Program Management, Association of Community Cancer Centers, 11600 Nebel Street, Suite 201, Rockville, Md. 20852.

CONFIRMED

CONFIRMED BY CLINICAL EVIDENCE

ZANTAC® 150 h.s.

ranitidine HCl/Glaxo 150 mg tablets

EFFECTIVE MAINTENANCE THERAPY

for healed duodenal ulcer patients

See last page for references and
Brief Summary of Product Information.

Glaxo / ROCHE

CONFIRMED

In two randomized, double-blind, and well-controlled clinical trials, ZANTAC 150 mg h.s. significantly superior to cimetidine 400 mg h.s. for maintenance therapy in healed duodenal ulcers.

Percent of patients with observed duodenal ulcer recurrence

		0-4 months	0-8 months	0-12 months	No. patients
USA[1]	ranitidine 150 mg h.s.	9%	14%*	16%†	60
	cimetidine 400 mg h.s.	23%	34%	43%	66
UK, Ireland, Australia[2]	ranitidine 150 mg h.s.	8%‡	14%‡	23%‡	243
	cimetidine 400 mg h.s.	21%	34%	37%	241

*p=0.02
†p=0.01
‡p≤0.004
%=life-table estimates
All patients were permitted prn antacids for relief of pain.

These two trials used the currently recommended dosing regimen of cimetidine (400 mg h.s.) and ranitidine (150 mg h.s.). A comparison of other dosing regimens has not been studied.

The studied dosing regimens are not equivalent with respect to the degree and duration of acid suppression or suppression of nocturnal acid.

The superiority of ranitidine over cimetidine in these trials indicates that the dosing regimen currently recommended for cimetidine is less likely to be as successful in maintenance therapy.

Convenient once-a-night dose with a

low incidence of side effects[3]

Headache, sometimes severe, seems to be related to ranitidine administration. Other side effects have been reported; for a complete listing, see the **ADVERSE REACTIONS** section in the Brief Summary.

No significant interference with the hepatic cytochrome

P-450 enzyme system at recommended doses

ZANTAC 150 mg has no significant drug interactions with theophylline, phenytoin, or warfarin. The bioavailability of certain medications whose absorption is dependent on a low gastric pH may be altered when ZANTAC or other medications that decrease gastric acidity are administered.

Zantac® 150

ranitidine HCl/Glaxo 150 mg tablets

One tablet at bedtime
for maintenance

See next page for references and
Brief Summary of Product Information.

Glaxo / ROCHE®

CONFIRMED

Zantac® 150

ranitidine HCl/Glaxo 150 mg tablets

One tablet at bedtime for maintenance therapy in healed duodenal ulcer patients

References:

1. Silvis SE, Griffin J, Hardin R, et al: Final report on the United States multicenter trial comparing ranitidine to cimetidine as maintenance therapy following healing of duodenal ulcer. *J Clin Gastroenterol* 1985;7(6):482-487.
2. Gough KR, Korman MG, Bardhan KD, et al: Ranitidine and cimetidine in prevention of duodenal ulcer relapse: A double-blind, randomised, multicentre, comparative trial. *Lancet* 1984;II:659-662.
3. Data available on request, Glaxo Inc.

ZANTAC® 150 Tablets
(ranitidine hydrochloride)
ZANTAC® 300 Tablets
(ranitidine hydrochloride)

BRIEF SUMMARY OF PRODUCT INFORMATION

The following is a brief summary only. Before prescribing, see complete prescribing information in ZANTAC® product labeling.

INDICATIONS AND USAGE: ZANTAC® is indicated in:

1. Short-term treatment of **active duodenal ulcer.** Most patients heal within four weeks.
2. **Maintenance therapy** for duodenal ulcer patients at reduced dosage after healing of acute ulcers.
3. The treatment of **pathological hypersecretory conditions** (eg, Zollinger-Ellison syndrome and systemic mastocytosis).
4. Short-term treatment of **active, benign gastric ulcer.** Most patients heal within six weeks and the usefulness of further treatment has not been demonstrated.
5. Treatment of **gastroesophageal reflux disease (GERD).** Symptomatic relief commonly occurs within one or two weeks after starting therapy and is maintained throughout a six-week course of therapy.

In active duodenal ulcer; active, benign gastric ulcer; hypersecretory states; and GERD, concomitant antacids should be given as needed for relief of pain.

CONTRAINDICATIONS: ZANTAC® is contraindicated for patients known to have hypersensitivity to the drug.

PRECAUTIONS: Symptomatic response to ZANTAC® therapy does not preclude the presence of gastric malignancy.

Since ZANTAC is excreted primarily by the kidney, dosage should be adjusted in patients with impaired renal function (see **DOSAGE AND ADMINISTRATION**). Caution should be observed in patients with hepatic dysfunction since ZANTAC is metabolized in the liver.

False-positive tests for urine protein with Multistix® may occur during ZANTAC therapy, and therefore testing with sulfosalicylic acid is recommended.

Although recommended doses of ZANTAC do not inhibit the action of cytochrome P-450 enzymes in the liver, there have been isolated reports of drug interactions which suggest that ZANTAC may affect the bioavailability of certain drugs by some mechanism as yet unidentified (eg, a pH-dependent effect on absorption or a change in volume of distribution).

Lack of experience to date precludes recommending ZANTAC for use in children or pregnant patients. Since ZANTAC is secreted in human milk, caution should be exercised when administered to a nursing mother.

ADVERSE REACTIONS: Headache, sometimes severe, seems to be related to ZANTAC® administration. Constipation, diarrhea, nausea/vomiting, and abdominal discomfort/pain have been reported. There have been rare reports of malaise, dizziness, somnolence, insomnia, vertigo, tachycardia, bradycardia, premature ventricular beats, and arthralgias. Rare cases of reversible mental confusion, agitation, depression, and hallucinations have been reported, predominantly in severely ill elderly patients.

In normal volunteers, SGPT values were increased to at least twice the pretreatment levels in 6 of 12 subjects receiving 100 mg qid IV for seven days, and in 4 of 24 subjects receiving 50 mg qid for five days. With oral administration there have been occasional reports of reversible hepatitis, hepatocellular or hepatocanalicular or mixed, with or without jaundice.

There have been rare reports of reversible leukopenia, granulocytopenia, thrombocytopenia, and pancytopenia.

Although controlled studies have shown no antiandrogenic activity, occasional cases of gynecomastia, impotence, and loss of libido have been reported in male patients receiving ZANTAC, but the incidence did not differ from that in the general population.

Incidents of rash, including rare cases suggestive of mild erythema multiforme, and, rarely, alopecia, have been reported, as well as rare cases of hypersensitivity reactions (eg, bronchospasm, fever, rash, eosinophilia) and small increases in serum creatinine.

OVERDOSAGE: Information concerning possible overdosage and its treatment appears in the full prescribing information.

DOSAGE AND ADMINISTRATION Active Duodenal Ulcer: The current recommended adult oral dosage is 150 mg twice daily. An alternate dosage of 300 mg once daily at bedtime can be used for patients in whom dosing convenience is important. The advantages of one treatment regimen compared to the other in a particular patient population have yet to be demonstrated.

Maintenance Therapy: The current recommended adult oral dosage is 150 mg at bedtime.

Pathological Hypersecretory Conditions (such as Zollinger-Ellison Syndrome): The current recommended adult oral dosage is 150 mg twice a day. In some patients it may be necessary to administer ZANTAC 150-mg doses more frequently. Doses should be adjusted to individual patient needs, and should continue as long as clinically indicated. Doses up to 6 g/day have been employed in patients with severe disease.

Benign Gastric Ulcer: The current recommended adult oral dosage is 150 mg twice a day.

GERD: The current recommended adult oral dosage is 150 mg twice a day.

Dosage Adjustment for Patients with Impaired Renal Function: On the basis of experience with a group of subjects with severely impaired renal function treated with ZANTAC, the recommended dosage in patients with a creatinine clearance less than 50 ml/min is 150 mg every 24 hours. Should the patient's condition require, the frequency of dosing may be increased to every 12 hours or even further with caution. Hemodialysis reduces the level of circulating ranitidine. Ideally, the dosage schedule should be adjusted so that the timing of a scheduled dose coincides with the end of hemodialysis.

HOW SUPPLIED: ZANTAC® 300 Tablets (ranitidine hydrochloride equivalent to 300 mg of ranitidine) are yellow, capsule-shaped tablets embossed with "ZANTAC 300" on one side and "Glaxo" on the other. They are available in bottles of 30 (NDC 0173-0393-40) and unit dose packs of 100 tablets (NDC 0173-0393-47).

ZANTAC® 150 Tablets (ranitidine hydrochloride equivalent to 150 mg of ranitidine) are white tablets embossed with "ZANTAC 150" on one side and "Glaxo" on the other. They are available in bottles of 60 tablets (NDC 0173-0344-42) and unit dose packs of 100 tablets (NDC 0173-0344-47).

Store between 15° and 30°C (59° and 86°F) in a dry place. Protect from light. Replace cap securely after each opening.

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Research Triangle Park, NC 27709

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April

INDIANA MEDICINE offers its readers a Continuing Medical Education series of articles prepared by the faculty of the Indiana University School of Medicine. The program is coordinated and supported by a grant from the school's Division of Continuing Medical Education.

As an organization accredited for continuing medical education, the Indiana University School of Medicine certifies that this CME activity meets the criteria for one credit hour in Category 1 for the Physician's Recognition Award of the American Medical Association, provided it is used and completed as designated.

To obtain Category 1 credit for this month's article, complete the quiz on page 571.



SEPTIC ARTHRITIS
An Acute Bacterial Joint Infection

STEVEN HUGENBERG, M.D.[1]
KENNETH D. BRANDT, M.D.[2]
Indianapolis

SEPTIC ARTHRITIS is a medical emergency. The outcome in the infected joint is related to the speed with which treatment is instituted. For most other forms of joint disease a few days' delay in diagnosis and treatment may prolong the patient's discomfort, but is unlikely to affect significantly the ultimate condition of the joint. In contrast, in septic arthritis a delay of only hours may result in irreversible damage to the articular cartilage, with permanent disability and crippling.

Routes of Infection

Synovial infection arises by one of three mechanisms:

1. Hematogenous dissemination of bacteria to the joint (as a complication of pneumonia, meningitis, gonorrhea, etc.).
2. Direct penetration of the joint (trauma, joint surgery, arthrocentesis).
3. Local spread from an adjacent focus of osteomyelitis (generally in children before closure of the epiphysis).

In most patients presenting to a primary care physician, the joint infection will have arisen as a consequence of hematogenous spread of the organism to the synovium. In such instances, septic arthritis is *prima facie* evidence of an antecedent bacteremia, even if multiple blood cultures are sterile.

Causative Organisms

The organisms most commonly cultured from acutely infected joints are Neisseria gonorrhea, Staphylococcus aureus, Streptococcus pyogenes, Streptococcus pneumoniae and Hemophilus influenza. Infections due to gram-negative enteric bacilli (e.g., E.

[1]Fellow in Rheumatology, Indiana University School of Medicine.
[2]Professor of Medicine and Head, Rheumatology Division, Indiana University School of Medicine; Director, Indiana University Multipurpose Arthritis Center.

coli, Pseudomonas, Proteus) account for up to 10% of all causes of acute septic arthritis and occur especially in patients with compromised host defenses (see below).[1,2] In a substantial proportion of patients with septic arthritis, cultures of the synovial fluid are sterile. This is particularly common in gonoccocal arthritis, in which bacteria can be identified in no more than half of synovial fluid samples.[3]

Predisposing Factors

Gonococcal arthritis typically occurs in young, otherwise healthy individuals. However, arthritis due to other organisms usually occurs in association with one or more of the following predisposing host factors:

1. Extremes of age—infants and children, and the very old, are at greater risk than the general population.
2. Previous damage to the joint due to, e.g., chronic gout, osteoarthritis, trauma, or neuropathic arthritis. Joints involved by rheumatoid arthritis are particularly predisposed to infection with Staphylococcus aureus.[4]
3. Neoplastic disease—especially, leukemia and lymphoma.
4. Administration of drugs which modify host responses—e.g., cytoxic and immunosuppressive drugs and adrenal corticosteroids.
5. Chronic debilitating disease—e.g., alcoholism, diabetes mellitus, renal failure, cirrhosis.[5]

Pathogenesis

The articular cartilage destruction that ensues in septic arthritis is the result of a combination of factors. These include proteolytic enzymes released by polymorphonuclear leukocytes and synovial cells, and interleukin I-like substances derived from bacteria, which stimulate cartilage degradation.[6]

Clinical Features

Typically, septic arthritis is characterized by an acute onset, with moderate to severe pain and swelling of the infected joint. Fever and shaking chills are common. Any diarthrodial joint may be affected, but septic arthritis most commonly involves large joints (knee, hip, elbow).

The disease is usually monoarticular, but gonococcal arthritis, especially in its prodromal stage, is commonly polyarticular. The distribution of joint involvement then may be indistinguishable from that seen in classical rheumatoid arthritis, with bilateral symmetrical polyarthralgias, or frank swelling, in the small joints of the hands and feet, wrists, temporomandibular joints, etc. Within 24-48 hours this polyarticular involvement in gonococcal arthritis subsides, however, leaving the patient with acute synovitis in one, or only a few, joints.[3,7]

Of all the acute arthritides—infectious and non-infectious—gout and gonococcal arthritis are most likely to present as tenosynovitis. In these instances, tendon sheath inflammation may occur without joint involvement.

Another clinical clue to the diagnosis of gonococcal joint infection is the presence of gonococcal dermatitis.[3] All patients presenting with acute arthritis should be examined carefully for the characteristic skin lesions—small papules, vesicles or pustules, often with necrotic or hemorrhagic centers. These occur singly or in crops and are generally located on the distal extremities. They represent septic emboli.

Any lesion consistent with gonococcal dermatitis should be aspirated with a small needle and a gram stain and culture of the tissue fluid should be performed. While the bacteriologic studies are often negative, they may reveal gonococci in the skin lesions, supporting a presumptive diagnosis of gonococcal arthritis in the patient who has an associated acute synovitis.[8]

Despite the above characteristic clinical features, a definite diagnosis of septic arthritis cannot be made on clinical grounds alone: Typical clinical features of the disease, such as monoarticular involvement and an acute presentation, even with shaking chills and high fever, are not specific for septic arthritis, but also may occur in other rheumatic diseases (e.g., gout, pseudogout). On the other hand, these typical clinical features are sometimes absent: One-third of patients with culture-proved acute bacterial joint infection do not have fever; one-third do not have chills; and one-third do not have peripheral blood leukocytosis. Furthermore, rheumatic diseases are not mutually exclusive—septic arthritis may develop, e.g., in the patient with psoriatic arthritis, osteoarthritis, or gouty arthritis.

Diagnosis

A definite diagnosis of septic arthritis requires identification of the bacterium in the joint fluid. Arthrocentesis and a carefully performed synovial fluid analysis are paramount. Unfortunately, as noted above, synovial fluid cultures are sterile in some cases. Moreover, bacterial growth in the culture may not be apparent for 24 hours or more. Generally, antibiotic therapy for septic arthritis should be started before the result of the synovial fluid culture is available. At this stage, the decision to treat for presumed septic arthritis should be based upon the results of the synovial fluid analysis. Several features in the synovial fluid analysis point to the presence of septic arthritis.

1. Total synovial fluid leukocyte count. In most cases of septic arthritis, the synovial fluid white cell count is greater than 50,000/mm^3.[1,9] Indeed, it is often over 100,000/mm^3. While synovial fluid leukocytosis of this magnitude may occur occasionally in rheumatic diseases in the absence of infection (e.g., in rheumatoid arthritis, psoriatic arthritis or gout), until proved otherwise, it should be assumed that septic arthritis is present whenever the synovial fluid white cell count is 100,000/mm^3 or greater. If the synovial fluid leukocyte count is 50,000-100,000/mm^3, septic arthritis must be strongly suspected.

2. **Differential count of synovial fluid leukocytes.** In most cases the proportion of polymorphonuclear leukocytes in the synovial fluid is greater than 90%.[1,9]

3. **Synovial fluid glucose concentration.** In 30-50% of cases of septic arthritis, the synovial fluid glucose concentration is lower than 50 mg%.[1,9] In some cases it may be unmeasurably low. The only other condition in which the synovial fluid glucose concentration is diminished to this extent is severe, long-standing rheumatoid arthritis. (This may cause confusion since, as noted above, rheumatoid joints are predisposed to bacterial infection.)

Culture-positive and culture-negative fluids from patients with septic arthritis may be quantitatively indistinguishable with respect to the above features.

4. **Microbiologic studies.** A gram stain and culture should be performed routinely on *every* synovial fluid sample. A positive gram stain dictates the selection of the antibiotic (see below) and is of great help in instituting appropriate treatment promptly.

X-rays of the involved joint should be obtained as part of the initial work-up and compared with films of the contralateral (presumably normal) joint. When septic arthritis is due to hematogenous spread of bacteria to the synovium, radiographs in the initial stages show only soft tissue swelling.[10] Some days later bony demineralization appears. In the untreated patient, destructive changes in the subchondral bone occur relatively late (10-20 days). If bone destruction is seen sooner, it is likely that primary osteomyelitis is present and that the joint is being infected by contiguous spread. To assure that osteomyelitis is not developing, x-rays should be repeated at 7-10-day intervals during the patient's hospitalization.

Treatment

Successful treatment of septic arthritis depends chiefly on two factors: adequate antibiotic therapy and adequate drainage of the closed space infection within the joint.

1. Antibiotic therapy

a. ***Selection.*** A positive synovial fluid gram stain obviously directs the choice of antibiotics. If the synovial fluid gram stain is negative and an extra-articular focus of infection is present (e.g., pneumonia, meningitis, pyelonephritis), the choice of antibiotic should be based upon the organisms identified in the latter. If the gram stain is negative and no extra-articular infection is apparent, initial antibiotic therapy should be directed against the organism most commonly implicated in the given clinical situation (e.g., coliform bacilli in infants, H. influenza and staphylococci in children, N. gonorrhea in young healthy adults).

b. ***Antibiotic sensitivity studies.*** The importance of antibiotic sensitivity studies on organisms cultured from the synovial fluid cannot be overemphasized. The results may indicate a need to switch from the agent selected initially to another antimicrobial.

c. ***Synovial fluid minimal bactericidal concentration (MBC).*** The determination of the MBC of the synovial fluid is as valuable as the antibiotic sensitivity studies. The aim is to achieve an antibiotic concentration sufficiently great so that a 1:10 (or greater) dilution of the fluid is bactericidal against the organism cultured from the joint.

If the clinical picture and synovial fluid analysis are consistent with septic arthritis (see above), treatment should be instituted even in the *absence* of positive bacteriologic studies. Delay at this stage may result in irreversible joint damage.[11]

d. ***When to withhold antibiotics.*** If the synovial fluid analysis does not show typical changes, it is preferable to withhold antibiotic treatment temporarily and to repeat the arthrocentesis and synovial fluid analysis in 12-24 hours. This problem arises chiefly in three situations:

(1). In the initial hours of a developing septic arthritis, when the intensity of the synovitis is mounting but is not yet great enough to cause charactersitic synovial fluid abnormalities.

(2). In the patient who has recently been given antibiotics—either for presumed septic arthritis or for infection in some other site. Such therapy may result in some suppression of the joint inflammation.

(3). In patients who do not have septic arthritis, but some other inflammatory joint disorder.

Because septic arthritis requires prolonged administration of parenteral antibiotics (see below), if the diagnosis is *not* definite, a very strong suspicion that the condition, indeed, is present should exist before treatment is instituted. Pragmatic exceptions to the above statement may exist, e.g., when the patient is elderly, or in shock, or has a significant heart murmur suggesting the presence of bacterial endocarditis. Delay in treatment in these instances could endanger the patient's life.

e. ***Route of administration.*** The antibiotic should be given intravenously or intramuscularly. The need to assure an adequate concentration of the drug in the synovium is too great to allow any "trial" of oral therapy. (The single exception is *non-suppurative* gonococcal arthritis, which may be treated satisfactorily with oral antibiotics).

Although there is general agreement about the need for parenteral antibiotics in treatment of septic arthritis, questions frequently arise concerning the use of supplementary intra-articular antibiotics. Usually, during systemic therapy with penicillin, cephalothin, cephaloridine and semi-synthetic penicillins, synovial fluid concentrations of the antibiotic are achieved that are several-fold greater than the minimal bactericidal concentrations

for Neisseria gonorrhea, and for gram-positive cocci. This obviates the need for intra-articular injection of the antibiotic in cases of infection with these organisms.[12]

Moreover, unless there is a definite indication for intra-articular therapy, there is good reason *not* to inject antibiotics into the joint, because they incite a chemical synovitis.[13] This clouds the interpretation of subsequent synovial fluid analyses that otherwise provide an excellent means of following the response to treatment (see below).

However, in treating joint infections by gram-negative enteric bacilli, the difference between the MBC of the antibiotic (see above) and the synovial fluid concentration actually achieved by systemic administration of the drug may be small. In this instance, if the response to systemic therapy is not prompt, consideration should be given to supplementation of the systemic therapy with intra-articular injection of the antibiotic.

f. ***Duration of therapy.*** As noted above, in most cases, acute bacterial joint infection is evidence of an antecedent bacteremia. Regardless of the rapidity of clinical improvement in the infected joint, therefore, parenteral antibiotic therapy is indicated for a reasonably lengthy period. We generally administer parenteral antibiotics for 3-4 weeks after all signs of local inflammation have subsided.

Gonoccocal arthritis is the single exception to the above approach. In cases of gonoccocal arthritis marked by joint suppuration, parenteral antibiotic administration may be discontinued after the local inflammation has subsided. As noted above, in cases of non-suppurative gonococcal arthritis, oral antibiotic therapy may suffice.

Unfortunately, the current prospective payment system presents problems for the physician seeking to treat a patient for 3-4 weeks within hospital antibiotic therapy. The mean geometic length of stay for septic arthritis (DRG 242) is 11.2 days.

Establishment of a multidisciplinary team (consisting of a pharmacist, nurse, and physician) that instructs and supervises the patient in self-administration of intravenous antibiotics at home may reduce the length of hospitalization and overall cost. With careful patient selection, no differences in efficacy have been seen between continued inpatient and outpatient treatment of septic arthritis when a period of progressive improvement has been demonstrated in hospital.[14,15,16] However, many insurance companies do not provide reimbursement for such home services.

2. **Drainage of the joint.** Adequate drainage of the infected joint *must* be provided. The great majority of acute joint infections can be successfully drained by needle aspiration, repeated as frequently as significant aspects of joint fluid continue to accumulate (often, daily).[17,18]

The above discussion should not be taken to indicate that surgical drainage is never indicated for septic arthritis. Surgical drainage is clearly the treatment of choice in the following circumstances:

- If the joint space cannot be successfully evacuated by needle aspiration, because of the presence of large amounts of necrotic debris, fibrin or loculation of the effusion.
- If clear improvement in the synovial fluid analysis is not apparent after 48-72 hours of treatment with parenteral antibiotics and repeated needle aspiration.
- In all hip infections. The anatomy of the hip joint precludes adequate evacuation of pus from this site by needle aspiration. Immediate surgical drainage of the infected hip is essential, especially in children, because the blood supply to the proximal femoral epiphysis follows a long intracapsular path, where it is vulnerable to compression by an accumulation of pus, resulting in ischemic necrosis of the femoral head.

Arthroscopy, with drainage and extensive irrigation of the joint through the arthroscope, has recently been employed in the treatment of septic arthritis. It provides an opportunity to visualize the intra-articular surfaces (synovium articular cartilage, adhesions). In comparison with arthrotomy (open surgical drainage), post-operative morbidity is reduced sharply.[19,20,21] No controlled trials exist, however, to demonstrate that arthroscopy is superior to arthrotomy in treatment of septic arthritis. Indeed, a recent poll of orthopedic surgeons revealed that most had employed arthroscopy in treatment of septic arthritis and, in most cases, had found it necessary to perform a subsequent arthrotomy.

Monitoring the Response to Therapy

Each synovial fluid sample obtained following the repeated arthrocenteses performed for joint drainage should be analyzed. A flow-chart should be maintained in the patient's hospital record, indicating the results of each analysis. This allows the physician to monitor sequential changes in the synovial fluid during treatment.

With successful treatment, changes in the synovial fluid analysis generally appear within 24-48 hours. The total leukocyte count falls, the glucose concentration rises and the synovial fluid cultures become sterile. A decrease in the proportion of polymorphonuclear leukocytes in the synovial fluid differential count often lags a few days behind the decrease in total leukocyte count. Gram stains may reveal dead bacteria (indistinguishable from viable organisms) for the first few days of treatment. If other features of the synovial fluid analysis show improvement and cultures of the fluid are sterile, persistence of a positive gram stain should not cause undue concern. Fever and the size of the joint effusion may diminish rapidly or subside gradually over several days.

Ancillary Treatment

Several other aspects of management are important. These include:

1. Splinting of the involved joint to prevent flexion contracture, especial-

ly for knee infections.

2. Passive range of motion exercises, carried out three or four times daily, to maintain diffusion of nutrients into the articular cartilage, help preserve range of motion and prevent adhesions. Recent evidence in rabbits with experimentally induced joint infection suggests that continuous passive motion may be especially helpful in this regard,[22] but no controlled trials have been performed in humans.

3. Isometric exercises for the muscles surrounding the joint. These should be instituted as soon as the effusion subsides.

4. Local applications of superficial heat over the involved joint with, e.g., a hydrocollator pack or electric heating pad, for 20 minutes four times daily. These may help relieve pain and muscle spasm and are particularly useful immediately preceding the exercise program.

5. As improvement occurs, a graded exercise program should be instituted with the assistance of a physical therapist. Weight-bearing on the infected joint should await disappearance of all signs of inflammation.

Complications

If the above treatment program is instituted within seven days following the onset of symptoms in the infected joint, complete recovery is likely, with ultimately pain-free function. It must be emphasized, however, that septic arthritis is serious. Excluding gonococcal arthritis, the mortality is approximately 10%! Several complications may develop, particularly when antibiotic therapy and joint drainage are delayed. These include:

1. Chronic suppuration
2. Chronic synovitis with a sterile joint effusion
3. Secondary osteomyelitis
4. Septic thrombophlebitis
5. Fibrous or bony ankylosis of the joint
6. Joint contractures
7. Dissemination of the infection to remote sites

Dissemination of infection from the joint to remote sites is not common. It generally occurs late in the course of septic arthritis. Thus, in the patient with acute septic arthritis, who is under treatment, development of infection of, e.g., meninges, lungs or heart valves by the organism cultured from the joint is not likely to represent bacterial seeding from the joint. Rather, it demands an intensified search for an *occult* focus of infection.

When to Refer

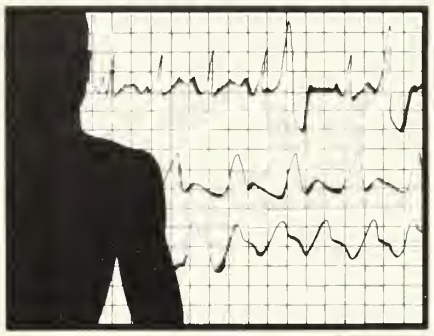
Because of the serious nature of septic arthritis and the potential for long-term disability and crippling, consideration should be given *at the outset* to consultation with a rheumatologist.

All patients with septic arthritis of the hip should be *immediately* referred to an orthopedic surgeon, as should any patient with septic arthritis in whom treatment with parenteral antibiotics and joint drainage by needle aspiration does not produce improvement (as reflected in the synovial fluid analysis) by 48-72 hours. Indeed, it is prudent to involve the orthopedic surgeon in the *initial* assessment of the patient, so that he may observe the response to therapy and follow the patient's progress with the rheumatologist and primary care physician.

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Delirium: Definition, Evaluation and Management in the Critically Ill Patient



ADULT CRITICAL CARE MEDICINE

Methodist Hospital OF INDIANA, INC

DALE E. THEOBALD, Ph.D., M.D.
Indianapolis

THE OCCURRENCE OF delirium may significantly disrupt patient care within the Intensive Care Unit and can be especially frightening to the patient's family who may already be having a difficult time coping with the critical illness of their loved one. Unfortunately, however, delirium is a common problem in such patients.

While the exact occurrence of post surgical or ICU delirium is unknown, estimates range from 10-50% in the general ICU population[1-2] and higher in selected groups, such as 13-100% in post-cardiotomy patients.[3] Therefore, the mental status of each patient in this setting must be repeatedly evaluated and steps taken to prevent or treat altered mental status.

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Evaluation

When evaluating a patient who is confused, disoriented, hallucinating, and in-and-out of contact with reality, the physician must assess the patient's current mental and physical status as well as the past medical and psychiatric history. Areas of the current mental status examination to be emphasized include orientation, memory (both long- and short-term), consciousness (degree of alertness), and cognitive functions (calculations, writing, and repeating and spelling words). Folstein, *et al*[4] have developed a widely used, standardized method of assessing cognitive function, the Mini-Mental State. The diagnosis of delirium, nevertheless, remains a clinical judgment based upon historical and clinical information as well as examination of neutral status.

Prior emotional disturbances, delirium, drug allergy, psychosis, substance abuse (especially alcohol and benzodiazepines), and the emotional status of the patient just before hospitalization (as an indicator of preexisting stress) may also assist in diagnosis.

A review of the patient's chart will provide a longitudinal view that may be helpful in looking for causal factors. For example, did the change in mental status coincide with the initiation of fever, hypotension, specific drug therapy, or did it perhaps occur after supportive respiratory therapy was stopped? The search for changes in the treatment program that might correspond with mental status changes, therefore, is crucial. It is important to review all laboratory data and medication administration, both recent and past, to identify organic reasons for the personality change. Cardiac glycosides, steroids, and drugs with anticholinergic side effects are frequently associated with mental status changes.

The use of the electroencephalogram (EEG) in diagnosis and assessment of altered mental status is somewhat controversial. Although not always present, the most typical pattern is generalized slowing in all cortical areas. This pattern also may be seen in dementia. Therefore, its use generally is reserved for cases when seizure activity is suspected or when the diagnostic picture is not clear.

Differential Diagnosis

Factors from the patient's evaluation now provide the foundation for a specific diagnosis. The differential diagnosis of delirium includes dementia; amnestic syndrome; psychiatric illnesses that produce similar mental status abnormalities, i.e. depression (sometimes called pseudodementia in the elderly); hysterical personality reactions; and primary psychoses such as schizophrenic illness and bipolar disorder manic type.

The five criteria for the diagnosis of delirium are listed in *Table 1*.[5] An essential feature of delirium is a persistent or intermittent decrease or clouding in consciousness. This change may worsen during the evening hours.

While the demented patient has a constant level of arousal, the patient with delirium has an alternating or variable level of consciousness. Perceptual disturbances such as hallucinations and misinterpretations, incoherent

TABLE 1
Diagnostic Criteria for Delirium

A. Clouded consciousness, as characterized by diminished awareness of surroundings and decreased ability to respond to environmental stimuli.
B. Two or more of the following must be present:
   1. Perceptual disturbance, such as hallucinations, illusions, or misinterpretations.
   2. Incoherent speech (at times).
   3. Sleep-wake disturbance, such as insomnia, or daytime drowsiness.
   4. Psychomotor disturbance (increase or decrease in activity).
C. Disorientation and impairment of memory.
D. Rapid development (in hours or days) of clinical features and the fluctuation of these features over the course of a day.
E. Evidence that a specific organic factor is etiologically related to the clinical disturbance.

speech, disturbance of sleep cycles, and psychomotor disturbances are less helpful in differentiating delirium from other mental disorders and may be present in other disorders in any combination.

If hallucinations or delusions are present, they generally are poorly organized in the patient with delirium. An organized system of delusions is more typical of a patient with a schizophrenic disorder. In delirium, short-term memory is more typically disturbed. Long-term memory may remain intact in patients with delirium but is more likely to be impaired in moderate to severe dementia.

The last two criteria in *Table 1* are especially useful. A rapid onset of mental status change is very helpful in differentiating delirium from dementia, which typically has a more gradual onset. Finally, finding a specific etiological factor that can be related to the clinical disturbance is very important in the diagnostic process. The diagnosis of schizophrenia or schizophreniform disorder requires exclusion of these organic factors.

The distinction between dementia and delirium is a very important one and may influence advice given to families or the determination of a patient's code status. While dementias may be reversible, deliria are generally more reversible and are seen by most as having a much better prognosis.

Of course, delirium also can be superimposed upon a dementing process. Murray[1] suggests the term "acute confusional state" when the primary deficit is reduced awareness and the history and laboratory data are not known. In his scheme, other mental status changes such as hallucinations, disorientation, and decreased consciousness are not needed, and "delirium" as a descriptor would be reserved for a more global, reversible impairment of mental processes. The absence of a correctable metabolic state or intoxication with normal consciousness would lead him toward a diagnosis of dementia.

Etiological Factors

The medical causes of delirium are numerous and are exhaustively listed by Aita[6] and Lipowski[7] (*Table 2*). These factors generally are categorized as endogenous (the physical state of the patient) and exogenous (toxins or medications). Their cumulative effects produce a transient encephalopathy that interferes with ongoing higher cognitive functions and the patient's ability to maintain attention and to concentrate. These physical and metabolic factors interact with the basic personality and emotional characteristics of the patient to produce the final

TABLE 2
Medical Causes of Delirium*

Acute Brain Injury
Seizures
Hypotension/Hypertension
Infection (primary and secondary to sepsis)
Cerebrovascular insufficiency/hemorrhage/emboli
Malnutrition
Exogenous toxins and medications
Connective tissue diseases
Pregnancy
Neoplasia
Allergic disorders
Hematologic disorders (anemia, thrombocytopenia, transfusion reactions
Anoxia/hypoxia
Indirect effects of trauma (fat or gas emboli, burn encephalopathy)
Temperature changes
Electrical injury
Electrolyte, acid-base and disorders of osmolality
Endocrine (thyroid, adrenal, parathyroid)
Metabolic (hyper/hypoglycemia, uremia, hepatic failure, hypercapnia)
*Modified from Aita[6]

behavioral abnormality. The current stress (both emotional and physical) encountered by the patient will also influence the severity and duration of the delirium.

Elderly patients and patients who are already physically compromised are more prone to delirium. The nature of a recent surgical procedure, if any, also has a decided effect. The longer the procedure, the higher the probability of some postsurgical delirium. Procedures with extended periods of extracorporeal circulation such as cardiotomies are especially likely to be followed by delirium.

Environmental factors also influence delirium. Wilson[8] compared the postsurgical course of patients in ICUs with and without windows and found significantly fewer episodes of delirium in settings with windows. These and related findings, such as increased patient isolation and sensory deprivation, have been supported by other investigators.[9,10]

Management

One of the first priorities in the management of delirious patients is prevention of harm to themselves or others. This may be accomplished by correcting any metabolic factors present. Restraints should be avoided if possible, as they may add to the patient's agitation and combativeness.

Sedating medications can be used cautiously as a cause of the delirium is sought or corrected. Neuroleptic medications such as haloperidol or thiothixene are useful, as they have little effect on blood pressure. Haloperidol also has the lowest anticholinergic side effect profile of the neuroleptic preparations. Benzodiazepines also can be used for sedation. Lorazepam can be recommended because it has no other known active metabolites and is relatively short-acting. The hazard in using sedating drugs is that the level of consciousness can be further affected by them; therefore, doses should be small.

Environmental manipulations can be helpful when combined with psychosocial interventions and correction of medical abnormalities. Day/night cycles should be preserved when possible. Dim night lights may help prevent stimulus deprivation during the night hours. Calendars, clocks, radios, and television sets also can be used to keep the interest and attention of the patient.

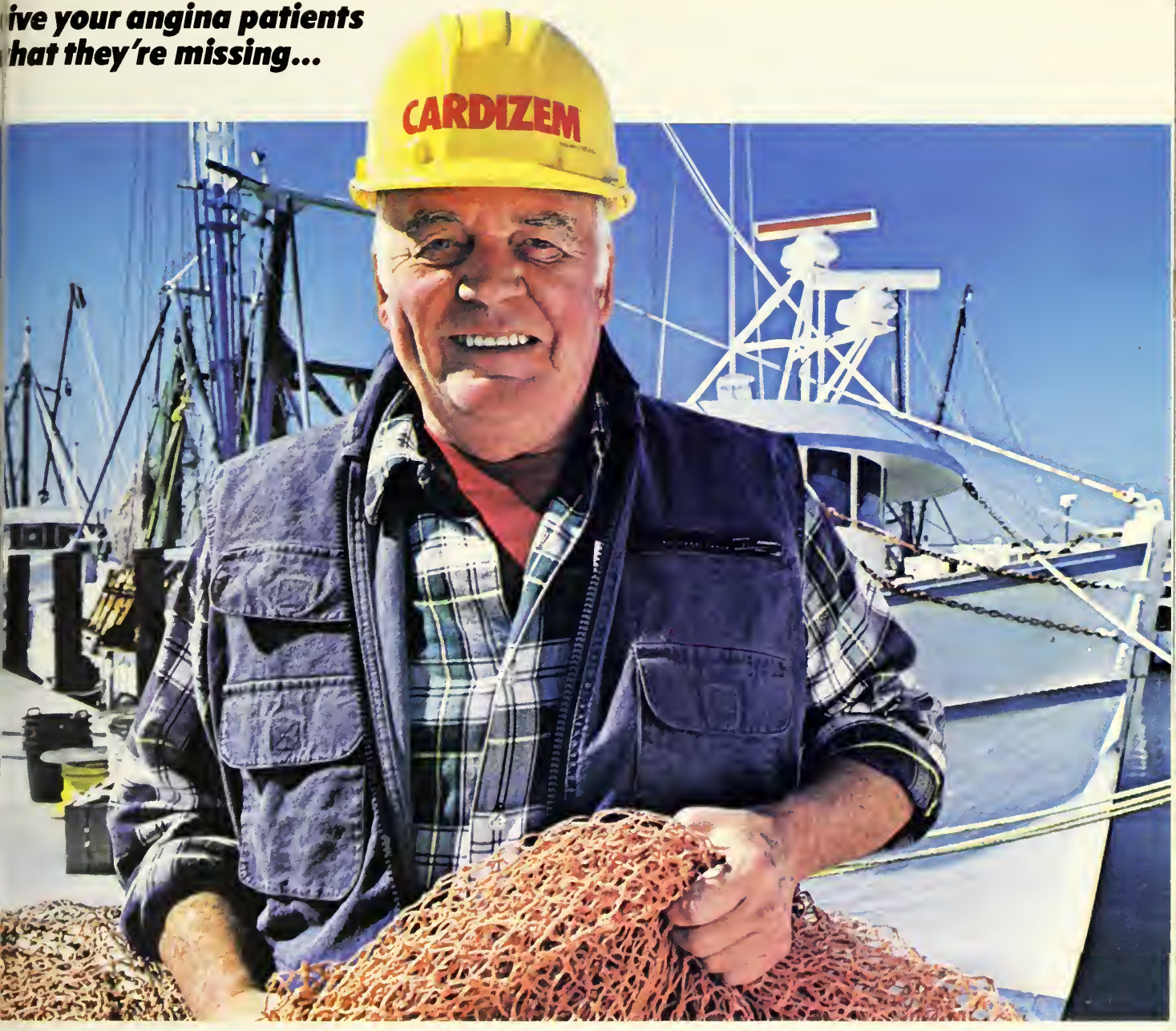
Supportive psychological treatment emphasizing orientation and reassurance is helpful in reducing confusion and secondary distress, as is regular contact for brief periods with familiar people such as family members. And finally, Murray[1] stresses the importance of clearly communicating instructions one at a time to the patient to avoid further confusion and misunderstanding.

By using good assessment strategies, carefully monitoring the patient's progress, and preventing the patient from harming himself during the episode of delirium, the disruption in patient care caused by delirium can be minimized. Both the length of the delirium and the secondary stress created by the delirious patient can be minimized by an organized treatment plan focusing on the patient and the patient's environment.

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CONTRAINDICATIONS
CARDIZEM is contraindicated in (1) patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker, (2) patients with second- or third-degree AV block except in the presence of a functioning ventricular pacemaker, and (3) patients with hypotension (less than 90 mm Hg systolic).

WARNINGS

1. ***Cardiac Conduction.*** *CARDIZEM prolongs AV node refractory periods without significantly prolonging sinus node recovery time, except in patients with sick sinus syndrome. This effect may rarely result in abnormally slow heart rates (particularly in patients with sick sinus syndrome) or second- or third-degree AV block (six of 1,243 patients for 0.48%). Concomitant use of diltiazem with beta-blockers or digitalis may result in additive effects on cardiac conduction. A patient with Prinzmetal's angina developed periods of asystole (2 to 5 seconds) after a single dose of 60 mg of diltiazem.*
2. ***Congestive Heart Failure.*** *Although diltiazem has a negative inotropic effect in isolated animal tissue preparations, hemodynamic studies in humans with normal ventricular function have not shown a reduction in cardiac index nor consistent negative effects on contractility (dp/dt).*
   Experience with the use of CARDIZEM alone or in combination with beta-blockers in patients with impaired ventricular function is very limited. Caution should be exercised when using the drug in such patients.
3. ***Hypotension.*** *Decreases in blood pressure associated with CARDIZEM therapy may occasionally result in symptomatic hypotension.*
4. ***Acute Hepatic Injury.*** *In rare instances, significant elevations in enzymes such as alkaline phosphatase, CPK, LDH, SGOT, SGPT, and other symptoms consistent with acute hepatic injury have been noted. These reactions have been reversible upon discontinuation of drug therapy. The relationship to CARDIZEM is uncertain in most cases, but probable in some. (See PRECAUTIONS.)*

PRECAUTIONS
General. *CARDIZEM (diltiazem hydrochloride) is extensively metabolized by the liver and excreted by the kidneys and in bile. As with any new drug given over prolonged periods, laboratory parameters should be monitored at regular intervals. The drug should be used with caution in patients with impaired renal or hepatic function. In subacute and chronic dog and rat studies designed to produce toxicity, high doses of diltiazem were associated with hepatic damage. In special subacute hepatic studies, oral doses of 125 mg/kg and higher in rats were associated with histological changes in the liver which were reversible when the drug was discontinued. In dogs, doses of 20 mg/kg were also associated with hepatic changes, however, these changes were reversible with continued dosing.*

Drug Interaction. *Pharmacologic studies indicate that there may be additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with CARDIZEM. (See WARNINGS.)*

Controlled and uncontrolled domestic studies suggest that concomitant use of CARDIZEM and beta-blockers or digitalis is usually well tolerated. Available data are not sufficient, however, to predict the effects of concomitant treatment, particularly in patients with left ventricular dysfunction or cardiac conduction abnormalities. In healthy volunteers, diltiazem has been shown to increase serum digoxin levels up to 20%.

Carcinogenesis, Mutagenesis, Impairment of Fertility. *A 24-month study in rats and a 21-month study in mice showed no evidence of carcinogenicity. There was also no mutagenic response in in vitro bacterial tests. No intrinsic effect on fertility was observed in rats.*

Pregnancy. *Category C. Reproduction studies have been conducted in mice, rats, and rabbits. Administration at doses ranging from five to ten times greater (on a mg/kg basis) than the daily recommended therapeutic dose has resulted in embryo and fetal lethality. These doses, in some studies, have been reported to cause skeletal abnormalities. In the perinatal/postnatal studies, there was some reduction in early individual pup weights and survival rates. There was an increased incidence of stillbirths at doses at 20 times the human dose or greater.*

There are no well-controlled studies in pregnant women; therefore, use CARDIZEM in pregnant women only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers. *Diltiazem is excreted in human milk. One report suggests that concentrations in breast milk may approximate serum levels. If use of CARDIZEM is deemed essential, an alternative method of infant feeding should be instituted.*

Pediatric Use. *Safety and effectiveness in children have not been established.*

ADVERSE REACTIONS
Serious adverse reactions have been rare in studies carried out to date, but it should be recognized that patients with impaired ventricular function and cardiac conduction abnormalities have usually been excluded.

In domestic placebo-controlled trials, the incidence of adverse reactions reported during CARDIZEM therapy was not greater than that reported during placebo therapy.

The following represent occurrences observed in clinical studies which can be at least reasonably associated with the pharmacology of calcium influx inhibition. In many cases, the relationship to CARDIZEM has not been established. The most common occurrences as well as their frequency of presentation are: edema (2.4%), headache (2.1%), nausea (1.9%), dizziness (1.5%), rash (1.3%), asthenia (1.2%). In addition, the following events were reported infrequently (less than 1%).

Cardiovascular:	*Angina, arrhythmia, AV block (first degree), AV block (second or third degree — see conduction warning), bradycardia, congestive heart failure, flushing, hypotension, palpitations, syncope*
Nervous System:	*Amnesia, gait abnormality, hallucinations, insomnia, nervousness, paresthesia, personality change, somnolence, tinnitus, tremor.*
Gastrointestinal:	*Anorexia, constipation, diarrhea, dysgeusia, dyspepsia, mild elevations of alkaline phosphatase, SGOT, SGPT, and LDH (see hepatic warnings), vomiting, weight increase*
Dermatologic:	*Petechiae, pruritus, photosensitivity, urticaria.*
Other:	*Amblyopia, dyspnea, epistaxis, eye irritation, hyperglycemia, nasal congestion, nocturia, osteoarticular pain, polyuria, sexual difficulties*

The following postmarketing events have been reported infrequently in patients receiving CARDIZEM: alopecia, gingival hyperplasia, erythema multiforme, and leukopenia. However, a definitive cause and effect between these events and CARDIZEM therapy is yet to be established.

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A Review of Creatine Kinase Isoenzymes and Associated Variants

TIMOTHY T. DICK, M.A., C(ASCP)[1]
THOMAS A. WEBB, M.D.[2]

'Creatine Kinase Electrophoresis Serves as an Important Clinical Laboratory Tool by Generally Contributing to the Exclusion or Conclusion of a Diagnosis of Acute Myocardial Infarction'

CREATINE KINASE (E.C.2.7.3.1) consists of two distinct monomeric forms: designated M (Muscle) and B (Brain). These monomers combine to form three distinct dimers identified as MM, MB, and BB. The MM form predominates in somatic muscle, MB in cardiac muscle, and BB in the brain as well as in a variety of other tissues.

In human serum, a low activity of CK-BB can be measured by the most sensitive methods. Postpartum, both fetal and maternal serum may contain detectable levels of CK-BB, presumably from a placental source.[1] In healthy adults, the CK-BB activity amounts to 0.5-1.0 U/L. However, by the more commonly employed clinical laboratory electrophoretic procedures, CK-BB is seldom seen. Creatine kinase MB is generally associated with acute myocardial infarction, leaving CK-MM as the predominant isoenzyme routinely noted by electrophoretic analyses.

Enzymatically, creatine kinase involves a nucleophilic attack on phosphorous to generate a trigonal bipyramidal intermediate which converts creatine to phosphocreatine as shown in *Figure 1*. Optimum reaction conditions include pH of 6.5-7.0, creatine phosphate concentration of 30 mmol/L or less, 2 mmol of ATP/L, and the presence of the magnesium ion as an activator.[2]

The resulting creatine phosphate bond contains high energy of about 8,500 calories per mole under conditions which include body temperature of 38°C and low concentration of the reactants. When extra amounts of ATP are available in the cell, much of the energy in ATP is utilized to synthesize creatine phosphate. Creatine phosphate cannot, however, act in the same manner as ATP, which serves as a coupling agent for cellular energy transfer.

Electrophoretic separation of the isoenzymes in human serum generally results in the following pattern:

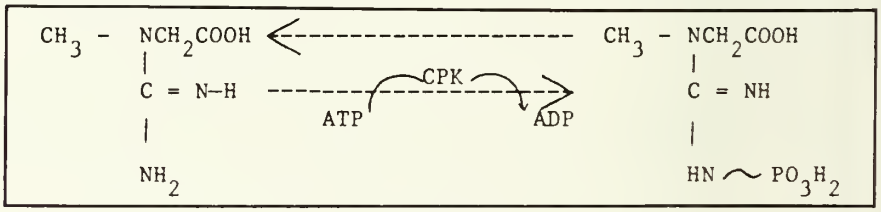


FIGURE 1

Anode (+) BB MB MM Cathode (–)
(CK1) (CK1) (CK3)

However, there appears to be a number of variants that can interfere with clinical diagnosis. Presently, the most commonly occurring variants can be divided into four classes (*see Figure 2*):

1) CK-MM + CK-BB – CK-MB
2) Mitochondrial-CK (CK-MT)
3) Macro-creatine kinase
4) CK-BB′

CK-MM + CK-BB – CK-MB[3]

There is *in vitro* evidence that CK-MM and CK-BB can "react" to form CK-MB by the transfer of M and B subunits. There is little evidence for *in vivo* transfer of subunits, however. Nevertheless, patients demonstrating a strong CK-BB electrophoretic band frequently present a CK-MB band in later samples. Such an event can have

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significant consequences as this potential *in vitro* hybridized band may be interpreted as evidence of acute myocardial infarction.

Mitochondrial Creatine Kinase[3,4]

Although there are generally considered to be three isoenzymes of CK composed of two distinct monomers, there is evidence that a third monomer exists. This entity can be isolated from mitochondria and generally appears in serum when there has been severe generalized cellular damage, such as in a prolonged hypoxic shock state. Creatine kinase-MT has a molecular mass similar to that of CK-MM and CK-BB. However, CK-MT has different immunologic properties, amino acid composition, electrophoretic mobility (cathodic to MM), and amino-terminal amino acid. These alterations suggest that CK-MT is indeed a distinct CK monomer.

Macro-Creatine Kinase[3,5,6,7,8]

Macro-creatine kinase can be subdivided into Type 1 and Type 2. Type 1 migrates to a position between CK-MM and CK-MB. It usually contains CK-BB and IgG. Creatine kinase-BB is bound to the free antibody binding end, suggesting an autoimmune process rather than nonspecific binding. Both kappa and lambda light chains have been implicated and are generally monoclonal. Type 2, on the other hand, is thought to consist of an oligomeric polymer of CK-MT which migrates cathodically to CK-MM. Type 2 is found in the sera of seriously ill patients, such as those suffering from a neoplasm.

CK-BB′[3,9,10]

A recently identified variant, CK-BB′, is the same protein as CK-BB but exists with an altered charge and is more stable than CK-BB. Creatine kinase-BB′ migrates electrophoretically to a position similar to CK-MB. Therefore, this migration pattern can be falsely considered evidence of acute myocardial infarction. It is believed that metal ions such as copper and zinc bind to the protein and create the more positive charge. Addition of EDTA or citrate to CK-BB′ results in the loss of CK-BB′ electrophoretic pattern with return to the typical, more anodic CK-BB position, presumably due to the removal of cations.

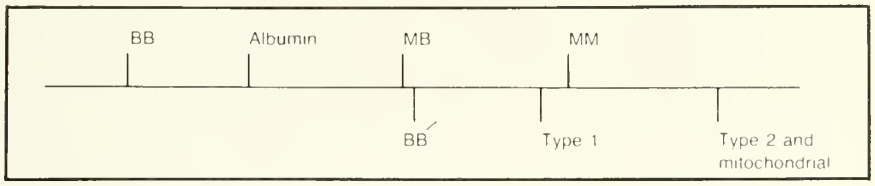


FIGURE 2: Relative electrophoretic positions of the typical CK pattern and its associated variants. Each line represents the peak position. Cellulose acetate medium in tris-barbital buffer at 300 mA for 10 minutes.

Because CK electrophoretic separation is a routine clinical analytic procedure and the results may play a major role in diagnosis and patient therapy, it is important that measures for the elimination of CK electrophoretic variants be considered. Careful handling of the blood sample can reduce CK-electrophoretic variants (CK-BB′, CK-MM + CK-BB → CK-MB) and can maximize the activity of CK-MB and CK-BB which may be present.

Generally, it can be recommended that samples be stored at 4°C if electrophoretic separation is to occur within a few hours. If not, the serum should be stored at −20°C and thawed in an ice bath at 4°C for testing. Repeated thawing and refreezing should be strongly discouraged. Ultimately, the electrophoretic separation should be performed in subdued lighting with reactivation of CK-BB enhanced by the use of chelators such as EDTA and by thiol addition.[11-17] Currently, the thiols 2-mercaptoethanol, dithioerythritol, dithiothreitol, N-acetyl cysteine, and 1-thioglycerol are suggested. These thiol compounds partially reverse inactivation due to cathecholamines and completely reverse urate inactivation of creatine kinase.[18]

Creatine kinase electrophoresis serves as an important clinical laboratory tool by generally contributing to the exclusion or conclusion of a diagnosis of acute myocardial infarction. In seriously ill patients it is important to eliminate, by all reasonable technical factors, false-positive interpretation of CK-MB. Toward this end, each clinical laboratory should examine its methods of CK-MB detection and, in the case of CK-electrophoresis, consider means of eliminating CK-electrophoretic variants which can be misinterpreted as representing CK-MB.

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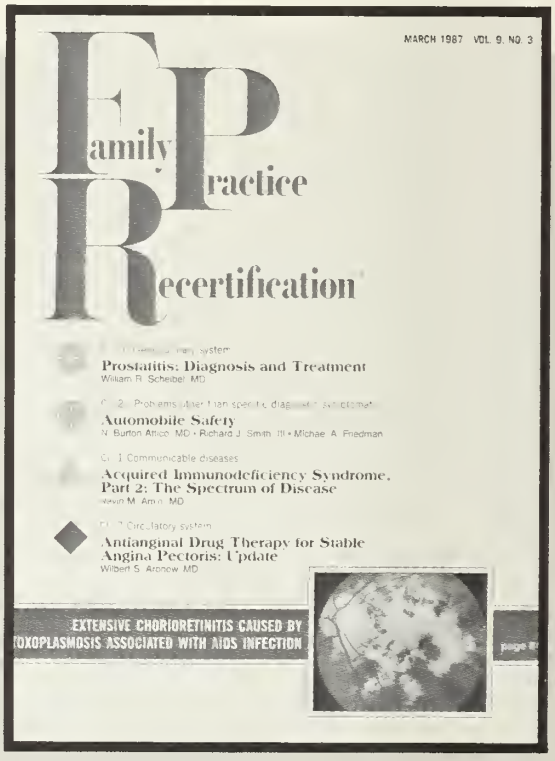
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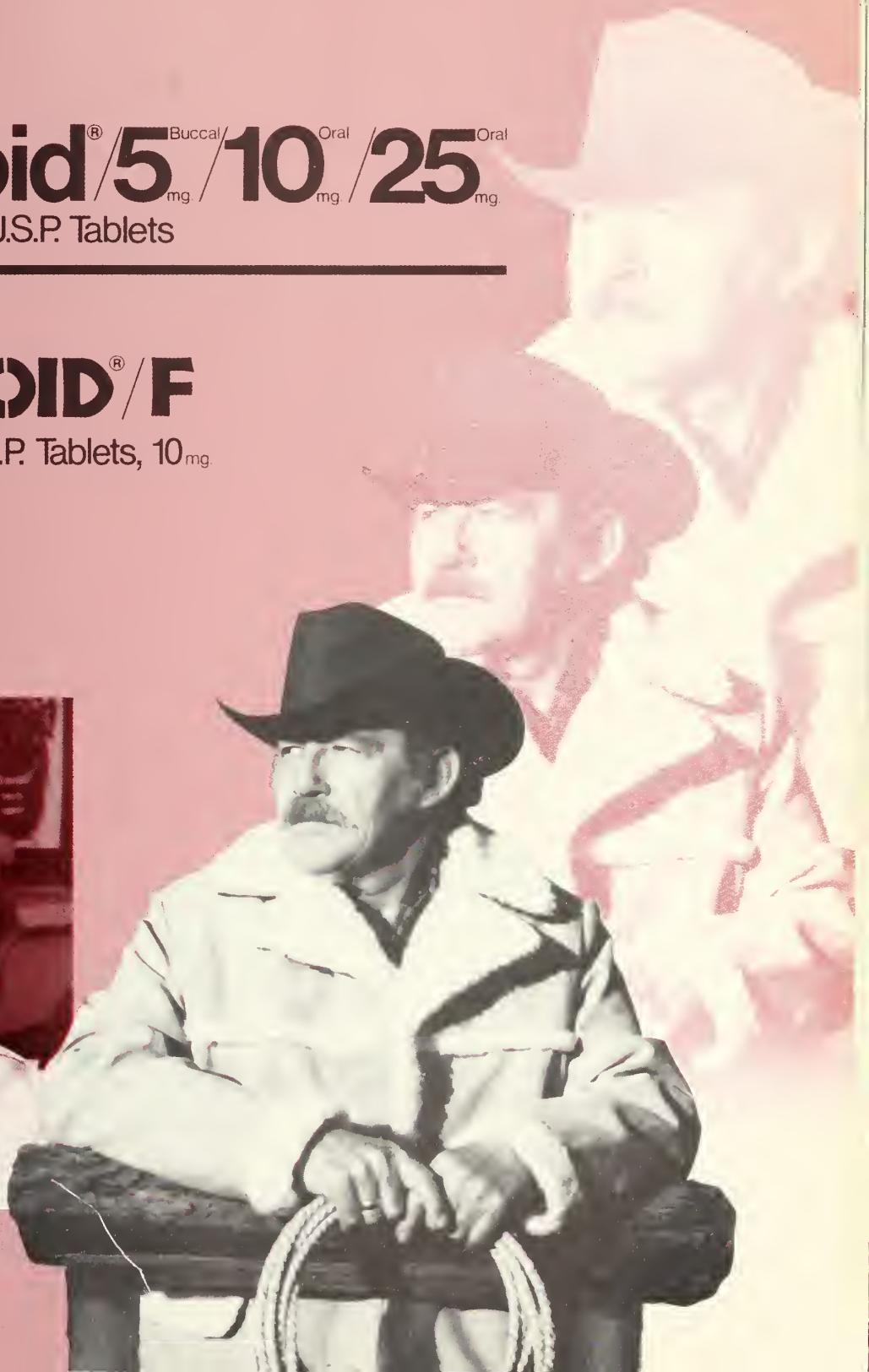
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Clinical Implications of the Red Cell Distribution Width: New Light on Anemias

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TJIEN O. OEI, M.D.
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Abstract

The new automated blood analyzers provide an index of anisocytosis or red cell volume distribution width (RDW) which indicates the quality of erythropoiesis. Use of the RDW and mean corpuscular volume (MCV) provides an improved method of anemia classification, including differentiation of iron deficiency anemia from beta thalassemia trait and anemia of chronic disease. We recommend the use of these variables in the classification of anemia by the physician and pathologist.

NORMAL BLOOD SMEARS consist of red blood cells with moderate variation in size (6.2 u - 8.2 u), with a mean of 7.2 u. Anisocytosis refers to a variation in cell diameter in stained smears outside this normal range. It is primarily identified by inspection of the peripheral smear but variations in shape can be visually confused with variations in size, making visual estimates of limited value.

Price-Jones described a time-consuming method of directly measuring red cell diameters on blood smears. He observed differences in pernicious anemia and iron deficiency and suggested that red blood cell size differences are diagnostically useful.[1]

Today, the new electronic blood analyzers can evaluate increased numbers of individual cells and generate a measure of variability in size. The coefficient of variation is the red cell distribution width (RDW). Use of the RDW and mean corpuscular volume (MCV) provides an improved method of anemia classification, including differentiation of iron deficiency anemia from beta thalassemia trait and anemia of chronic disease.[2]

Case Reports

Case 1: A 28-year-old asymptomatic nurse was told she looked anemic. Her complete blood count (CBC) is listed in *Table 1*.

Case 2: A 16-year-old Laotian boy was evaluated for anemia and microcytosis during a family study. His 3-year-old brother required repeated transfusions for beta thalassemia major (Cooley's anemia). His CBC is listed in *Table 1*.

Case 3: A 12-year-old black child presented with joint and abdominal pain. His CBC is listed in *Table 1*.

Case 4: A 37-year-old man presented with anemia and a long history of gouty arthritis with a new onset of knee pain. His CBC is listed in *Table 1*.

Methods

The hematologic measurements were generated by a Coulter Model S plus V (Coulter Electronics). Electrophoretic studies, serum iron, total iron binding capacity (TIBC) and bone marrow biopsy were performed using standard laboratory techniques.[3,4]

Discussion

Max Wintrobe initiated the concept of red blood cell indices in 1932. Using the red cell count, hemoglobin and hematocrit, he calculated the red cell size, average hemoglobin content and average hemoglobin concentration of the red cell. He was then able to classify anemias according to hemoglobin concentration and cell size.[5] However, some overlap of disease states resulted such as iron deficiency anemia and the anemia of beta thalassemia trait.

With the development of sophisticated blood analyzers, precise evaluation of large numbers of red blood cells is performed rapidly with the generation of graphic data such as histograms and various measurements of variance. The measurement of variance of red blood cell size is the RDW. It is a three-dimensional measurement of anisocytosis that affords a more focused approach to anemias when evaluated in concert with MCV (*Table 2*).

The RDW is an early indicator of nutritional deficiency anemias and is always increased. Patients with early iron, folate and B_{12} deficiency usually show a normal MCV. However, as the anemia becomes advanced, the MCV will decrease in iron deficiency anemia and increases in folate or B_{12} deficiency. A combined nutritional anemia will continue to maintain a normal MCV.

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TABLE 1

	Normal Values	Patient 1	Patient 2	Patient 3	Patient 4
Hemoglobin	(M 14-18 g/dl) (F 12-15 g/dl)	7.9	11.5	6.3	9.0
Hematocrit	(M 40-54%) (F 35-49%)	26.4	35.1	16.7	27.0
RBC	(M 4.6-6 mil/cumm) (F 4-5.4 mil/cumm)	4.1	5.42	1.94	2.88
WBC	(4.5-11.5 K/cumm)	5.2	8.7	22.6	13.1
MCV	(80-94 fl)	64.4	64.7	86.1	93.6
MCH	(26-32 pg)	19.3	21.2	32.5	31.2
MCHC	(32-36%)	29.9	32.8	37.7	33.4
RDW	(11.5-14.5%)	18.5	13.9	30.0	13.9
Platelets	(150-450 K/cumm)	328	408	440	667

Patient 1 represents iron deficiency anemia with an increased RDW and decreased MCV. Iron studies revealed a serum iron of 12 ug/dl (normal 50-160 ug/dl), and total iron-binding capacity of 567 ug/dl (normal 250-400 ug/dl). With treatment of the nutritional anemia, the MCV will normalize first, followed by the RDW.

There always has been difficulty differentiating iron deficiency anemia from beta-thalassemia trait. Unlike iron deficiency, the RDW is normal or just slightly elevated. These findings would suggest further studies such as hemoglobin electrophoresis. Patient 2 represents beta-thalassemia trait with a decreased MCV and normal RDW.

TABLE 2

MCV	High (<94 FL)	Aplastic Anemia	Folate Deficiency B_{12} Deficiency Immune Hemolytic anemias Cold Agglutins Newborns Chemotherapy effects
	Normal (80 FL-94 FL)	Normal Chronic disease (90%) Non-anemic hemoglobinopathy (AS & AC) Hereditary spherocytosis	Mixed deficiency (iron & folate or B_{12}) Early iron deficiency Treated iron deficiency Early Folate deficiency Anemic hemoglobinopathy (SS & SC)
	Low (<80 FL)	Beta Thalassemia trait Alpha Thalassemia trait Anemia of chronic Disease (10%)	Iron deficiency Hemoglobinpathy & Thalassemia Hemoglobin H Homozygous thalassemia
		NORMAL (11.5%-14.5%)	HIGH (>14.5%)
		RDW	

Hemoglobin (Hb) electrophoresis revealed an elevated Hb-A2. The peripheral smear contained increased target cells. Homozygous beta thalassemia produces a severe anemia with an increased RDW and decreased MCV similar to iron deficiency. The peripheral smear will contain numerous target erythrocytes unlike iron deficiency.

Alpha thalassemia also may cause microcytosis and anemia. Alpha thalassemia carriers (one alpha chain deletion) have a normal MCV and RDW. Patients with alpha thalassemia trait (two alpha chain deletions) have a decreased MCV with a normal RDW. Hemoglobin H diseases (three alpha chain deletions) have a severe anemia with microcytosis and will show a pattern similar to iron deficiency anemia. Examination of the peripheral smear and electrophoretic studies will help differentiate the two states.

Sickle cell trait and disease are relatively common in Indiana. Patients with sickle cell trait and hemoglobin C trait will have a normal MCV and RDW. Anemic hemoglobinpathies such as sickle cell disease, hemoglobin C disease and hemoglobin SC disease will all have a normal MCV with increased RDW. Electrophoretic studies will identify the abnormal hemoglobin. Patient 3 represents sickle cell disease in crisis. The MCV and RDW are sug-

gestive of an anemic hemoglobinopathy. The peripheral smear contained numerous sickled red cells. Electrophoretic studies confirmed hemoglobin S and F.

Anemia of chronic disease (ACD) is one of the most common states that must be separated from iron deficiency anemia. Usually the MCV and RDW are normal; however, the MCV may be slightly decreased in 10% of cases. ACD is represented by Patient 4, where a normal MCV and RDW are seen in a patient with anemia and chronic gouty arthritis. Iron studies confirmed a low serum iron (54 ug/dl), low total iron binding capacity (222 ug/dl) and increased stainable marrow iron. The pattern of normal or slight decreased MCV and normal RDW easily differentiates this state from iron deficiency.

Other anemias such as aplastic anemia are listed in *Table 2* with their MCVs and RDWs. The use of this table is helpful in classifying anemias. The MCV and RDW can then suggest additional studies such as serum iron, B_{12}, folate or bone marrow examination.

Transfusions will complicate the pattern of MCVs and RDWs. They act to normalize the MCV, but may actually increase the RDW. Classification of anemias by the RDW after transfusion should be avoided.

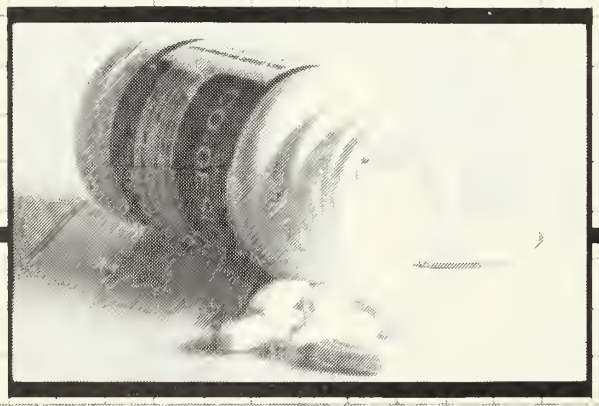
Use of the RDW and MCV provides an improved method of anemia classification. We recommend the use of these variables by the physician and pathologist.

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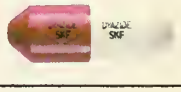
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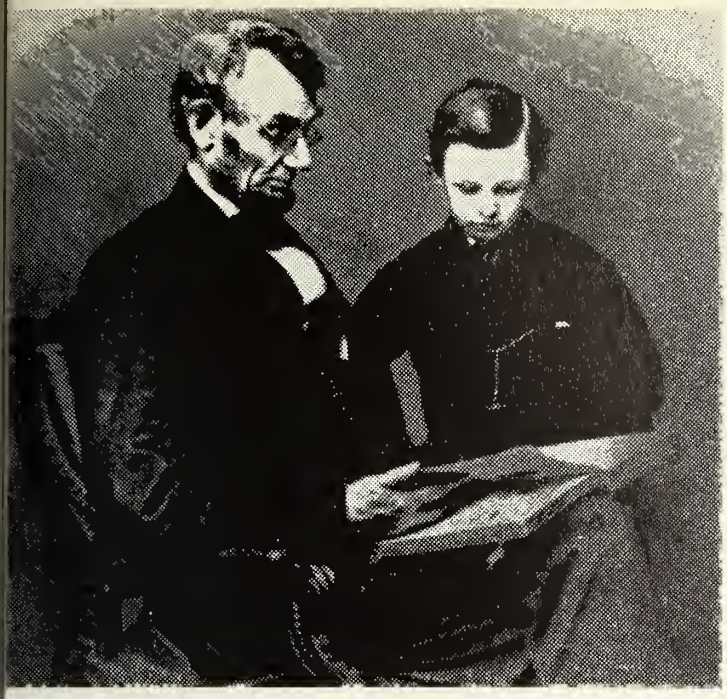
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Hepatic Abnormalities Usually Are the Only Clinical Manifestation of Wilson's Disease in Children. Early Diagnosis of the Disease Is Crucial if the Consequences Are To Be Prevented.

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WILSON'S DISEASE (WD) is a rare genetically determined condition in which an excess amount of copper is deposited in tissues, leading to cirrhosis and brain damage.[1] Hepatic abnormalities usually are the only clinical manifestation of the disease in pediatric patients.[2] Death can occur as the result of fulminant hepatitis.[3-5] The consequences can be prevented by adequate chelation therapy if the disease can be diagnosed before symptoms develop. We present a case that illustrates the importance of early diagnosis of this disease.

Case History

A healthy 9-year-old Yemeni boy and his parents were referred to King Faisal Specialist Hospital and Research Centre for genetic counseling after a loss of six children in the family.

The parents, who are first cousins, have had 10 children with only three remaining alive. Of the other seven, one girl died of gastroenteritis at the age of 2 and the other six (three girls and 3 boys) died of acute hepatic insufficiency at ages between 8 and 9. The parents said all the children experienced a similar rapid fatal course of a low grade fever, severe jaundice and abdominal distention. Two older brothers are alive and well at 18 and 30 years of age, respectively.

On physical examination, the patient appeared to be in good health, well developed, well nourished, and all vital signs were normal. Neither hepatomegaly nor Kayser-Fleischer ring was found. The neurologic examination was also normal. Laboratory data revealed WBC of 7,000 x 10^3/cumm with a normal differential. The hemoglobin level was 14 g/dl with a hematocrit of 45%. The chemistry profile revealed a slightly increased level of serum aspartate transaminase (AST), alanine transaminase (ALT) and alkaline phosphatase. Serum bilirubin level was at a normal level. Ceruloplasmin level was undetectable by the radioimmunodiffusion method using kits from Kalstad, Kansas City, Kansas. Serum level of copper was 26 mg/dl. (normal range: 65-165 mg/dl); urinary copper was 385 mg/24 hrs (normal range: 15-30 mg/24 hrs).

CT scan of the liver was unremarkable. A percutaneous liver biopsy showed a histologic appearance similar to that of chronic active hepatitis (*Figure*). A small fragment of liver tissue was sent for analysis of copper to the Metpath Laboratory in London, England. The amount of copper was found to be 211.6 mg/100 g per dry weight, which was diagnostic for Wilson's disease.

The patient was treated with 250 mg penicillamine twice a day, and 25 mg pyridoxine daily. He was discharged from the hospital after two weeks and has been doing well for the last six months.

The two older brothers were also screened and found to have increased urinary copper, but the serum copper was within normal range, as was the ceruloplasmin level.

Discussion

Wilson's disease (hepatolenticular degeneration) is regarded as an inborn error of copper metabolism. The basic defect is unknown, but the consequences seem to be caused by copper accumulation,[6,7] which begins in infancy, but the deposits are limited for years to the liver.[8] However, hepatic signs and symptoms rarely appear

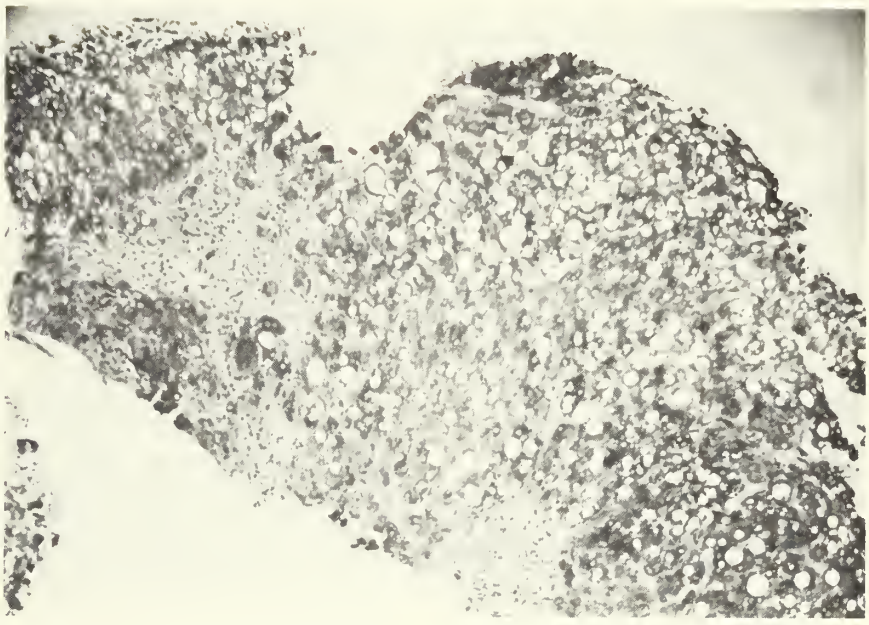
before the age of 6, and neurologic effects occur generally later in childhood or most often in adolescence—with perhaps one exception, when the disease was diagnosed at the age of 58.[9] Some patients, such as the siblings of our patient, succumb rapidly to a massive hepatic necrosis, hemolysis and, consequently, to renal insufficiency.

The clinical presentations of WD in childhood vary but mostly mimick all forms of liver disease.[10-12] The Kayser-Fleischer rings, considered until recently as pathognomonic of Wilson's disease, may be absent,[13] especially in the pediatric group with predominantly hepatic manifestation. Most patients with WD have a low serum ceruloplasmin level and increased 24-hour urinary copper excretion. However, either one, or even both, of these characteristic features may be absent.[10,11,14] The histologic examination generally is not considered specific.[15]

The estimation of hepatic copper appears to be the best diagnostic test in the diagnosis of Wilson's disease.[12] Although copper may accumulate during a long-term cholestatic liver disease and primary biliary cirrhosis,[16-18] these conditions can be differentiated from WD clinically and by using other laboratory tests.

The availability of effective treatment makes it particularly important to diagnose Wilson's disease before clinical manifestations appear. The homozygote, even if asymptomatic, will ultimately develop the clinical signs of the disease, but the heterozygote will not. Criteria must be selected that provide a basis for separating the presymptomatic homozygote from the heterozygote.

Most presymptomatic homozygotes have a high serum copper and a low ceruloplasmin level, but about one-fifth of all heterozygous carriers of the abnormal gene display concentrations in the same range as in homozygotes.[19] The urinary copper level may be helpful, but there is difficulty in obtaining a complete and uncontaminated 24-hour urine specimen in a young child. Copper-64 tracer studies have failed to clearly distinguish presymptomatic homozygous from heterozygous individuals.[20]



Histologic section showing diffuse fatty changes with portal fibrosis and focal inflammatory changes in the liver parenchyma. (Hematoxylin-eosin stain x 100).

In summary, the diagnosis of Wilson's disease should be considered if a patient dies of unexplained acute liver failure. Postmortem examination can confirm the diagnosis. The information is important for siblings and other family members. Screening of siblings and close relatives of patients with WD may be helpful in detecting the disease at an early stage when it is much more amenable to therapy. Assays for serum ceruloplasmin, serum copper and 24-hour urinary copper are recommended for screening. Since one-fifth of all heterozygotes cannot be distinguished from homozygotes based on the biochemical determinations, a percutaneous biopsy for hepatic copper concentration is indicated if one of the biochemical tests is abnormal.

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Medicine's Lighter (Darker) Moments

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THE GLASS DOOR

IT IS OFTEN SEEN in emergency medical care that glass doors can be a hazard. That fact is seldom thought of in the designing of houses and similar facilities.

A number of years ago I was asked to report to Bloomington, Indiana, to perform gastric surgery on one of Indiana University's revered professors.

The physician who requested my services, and who was the primary physician of this individual, had some difficulty getting into the anesthetic department. The hospital was being remodeled at the time. The doctor turned rather rapidly to go into the operating room. Not realizing that new glass doors had been installed in the space between the anteroom and the surgery, he ran headlong into one of them. He suffered a laceration over one eye—his glasses shattered—and it was necessary to perform surgery on him before we could proceed to the definitive surgery on the stomach of the professor for whom the arrangements had been made.

To further emphasize the glass door problem, two other episodes should be outlined:

A young girl, daughter of a professional golfer at an Indianapolis golf course, was playing at a neighbor's house one evening. She was running through the house, being chased for some reason or other. She approached a glass door at the exit at the back of the house and, not seeing it, ran through it.

Fortunately, her injuries were not too serious. She suffered only an extensive laceration on the dorsum of her hand. This, however, could have been a critical problem because at the time she was a concert-caliber pianist. But the tendons were repaired successfully and she was subsequently able to continue her musical career.

In another episode involving a glass door, the results were tragic. A young girl on her wedding night was staying by previous invitation at a home she was not familiar with. During the course of the evening, her new husband began chasing her through the house en route, presumably, to dive into the swimming pool.

The bride ran through a glass door that separated the house and the swimming pool. Unfortunately, the glass almost severed the right half of her neck and she died in a matter of minutes.

This type of tragedy should never have happened. Glass doors need to be identified in such a way that such accidents cannot occur.

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Detection of the Lactic Acid Threshold

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Abstract

A new method is presented for the detection of the lactic acid threshold from the ventilatory response during a stress test. The test is conducted as a series of increasing loads with a period of rest between each load. The minute volume, which reaches a steady state at each load below the lactic acid threshold, is observed to decline along the same path as was the increase during the work phase. Above the lactic acid threshold, there is an increasingly large overshoot of the response during the rest phase. This over-shoot, called the ventilation excess, has a high correlation coefficient, $r = 0.994$ for $N = 6$, with the blood lactate concentration.

RELATIONSHIPS BETWEEN ventilation changes and blood lactate, hydrogen ion, and bicarbonate with exercise have been recognized for more than 60 years since the works of Douglas[1] and Hill.[2] The lactic acid threshold is that point in the increasing work load at which the blood lactate concentration starts to rise steeply with increasing load. At or near this work load, the ventilation begins to increase more rapidly than the oxygen consumption. There is not yet agreement how these two are related.

This threshold (or thresholds) defines the maximum level at which a subject can comfortably perform for an extended time, and is becoming recognized as an important parameter in the description of physical condition.

The lactic acid threshold is usually estimated from the respiratory analysis data during the stress test. It is usually obtained from a plot of the ventilation rate, $\dot{V}E$, versus the oxygen consumption, $\dot{V}_{O2}$. The $\dot{V}E$ versus $\dot{V}_{O2}$ plot is usually a straight line up to the threshold, above which the plot has a distinctly steeper slope. An alternative method is to identify the work load at which the $\dot{V}E/\dot{V}_{O2}$ ratio begins to increase.

Both methods are imprecise and require the subject to perform at work loads well above the threshold. The interpretation of the lactic acid threshold is itself subject to controversy. An example of this can be found in a comparison of the recent reviews on the anaerobic threshold by Davis,[3] by Brooks,[4] and by Wasserman, *et al.*[5]

We will now describe a modification of the stress test procedure which is more accurate and allows the threshold to be detected immediately during a stress test without the need to go to high work levels.

Methods

Four healthy men were tested at the stress test facility in the Methodist Hospital Pulmonary Testing Laboratory. Each man was fully informed as to the nature and objectives of the project. Preparation for the test consisted of the insertion of an indwelling catheter in the forearm vein. A 3 ml blood sample was obtained at rest and at the end of each work load. After each sample the catheter was flushed with heparinized saline solution to prevent clotting. Each sample was placed in a heparinized collection tube and immediately chilled in an ice bath. Each sample was analyzed within three hours for plasma lactate with a DuPont Automatic Clinical Analyzer with an accuracy of 0.1 mmoles/liter.

The stress test was performed on a dynamometer-braked ergocycle (Ergopneumotest, Jaeger, West Germany) on which the work load can be set to an accuracy of 2 watts. Continuous breath analysis was performed for expired volume, oxygen content, and carbon dioxide content and summarized results were stored by the computer monitor every 15 seconds. Oxygen was measured by fuel cell and carbon dioxide content by infra red methods.

The test consisted of a five-minute warm-up at no load, followed by repeated intervals at increased load, each of which consisted of three minutes of load followed by five minutes of no load. A pedal rate of at least 80 rpm was maintained at all

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times. Each subject was started at a load that was intended to be well under his lactic acid threshold. At each successive interval the work load was increased by 10 watts until the threshold was observed, after which the load was increased by 40 watt intervals until the subject's maximum work was approached. During the test, the ventilation excess threshold was determined from the plot of $\dot{V}E$ versus $\dot{V}_{O2}$.

The excess ventilation, $\dot{V}ex$, is defined as the amount by which the ventilation exceeds the amount expected from oxygen consumption at work levels below the threshold, and is obtained as the difference in area under the $\dot{V}E$ versus $\dot{V}_{O2}$ recovery curve above the threshold less the area of the equivalent curve before the threshold.

Each value of $\dot{V}ex$ is obtained from 20 observations of $\dot{V}E$ and $\dot{V}_{O2}$ during the recovery phase. The error of $\dot{V}ex$ is estimated to be about 2%.

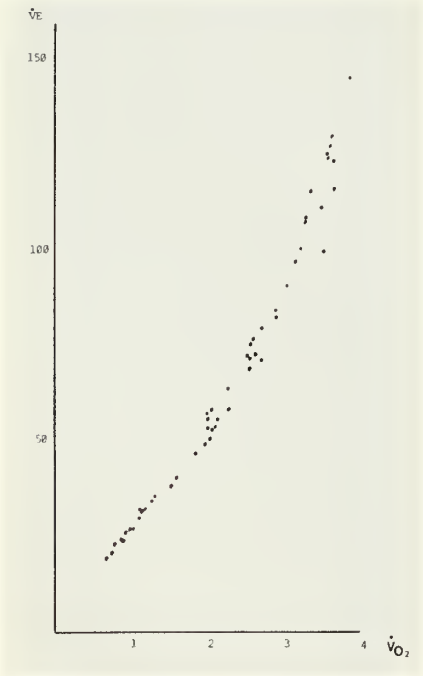


FIGURE 1: Minute volume versus oxygen consumption rate ($\dot{V}E$ vs. $\dot{V}_{O2}$) for a continuous interval ergocycle stress test on subject A. This is test #3 from Reference 6.

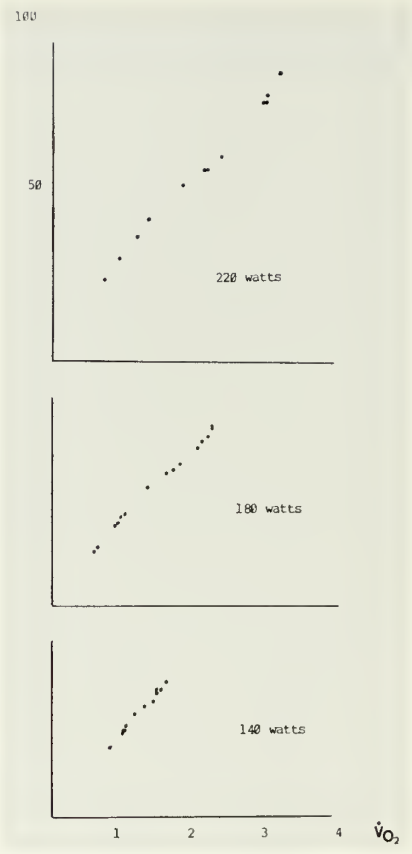


FIGURE 2-A: Work phase $\dot{V}E$ versus $\dot{V}_{O2}$ for three different work levels. Data from test A-2. Values for $\dot{V}E$ and for $\dot{V}_{O2}$ are increasing during this phase.

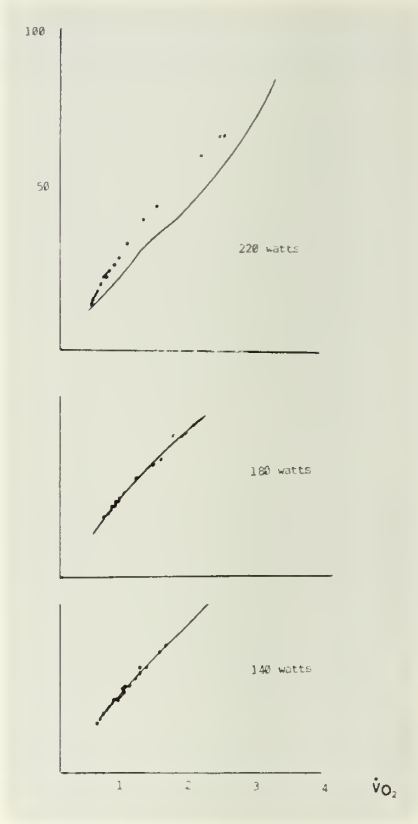


FIGURE 2-B: Recovery phase $\dot{V}E$ versus $\dot{V}_{O2}$ for the same three work levels. The smooth curves are for the ventilation rates below the threshold and are obtained from the data in Fig. 2-A. Values for $\dot{V}E$ and for $\dot{V}_{O2}$ are decreasing during this phase. The threshold is just about to start at the 180 watts level and is well underway at 220 watts.

Results and Discussion

The results of a typical stress test with continuous steps in the work load is given as a $\dot{V}E$ versus $\dot{V}_{O2}$ plot in *Figure 1*. The inflection point of the curve is taken to be the lactic acid threshold. The accuracy to which this point can be estimated is now to be compared to that of the following method.

In *Figure 2-A* the results of the work phase of each of three intervals are plotted as $\dot{V}E$ versus $\dot{V}_{O2}$. The results of the recovery phase of the three intervals are plotted in *Figure 2-B*. In this test measurements of blood lactate showed that the lactic acid threshold occurred somewhere between the second and the third interval.

Our procedure is to plot the respiratory data while the stress test is going on. Data for $\dot{V}E$ versus $\dot{V}_{O2}$ for each recovery phase are plotted on graph paper. Before the threshold occurs, these points fall on a narrow straight line. When the threshold is reached, the first recovery phase thereafter will have larger values of $\dot{V}E$ than expected. The area between the actual curve and the expected curve, which we call the excess ventilation, $\dot{V}ex$, may be found by any convenient means such as counting

TABLE 1

Subject	Birth Date	Height	Weight	$\dot{V}_{O_2}$/max	work load at $\dot{V}$ex	work load at VLac
A test 1	6/8/1931	74 in	178 lbs	4.1 1	192 watts	198 watts
A test 2	6/8/1931	74 in	180 lbs	4.3 1	193 watts	190 watts
A test 3	6/8/1931	74 in	178 lbs	3.9 1	203 watts	202 watts
B	10/3/1958	74 in	168 lbs	3.8 1	186 watts	186 watts
C	12/12/1957	70 in	189 lbs	3.7 1	163 watts	168 watts
D	10/28/1961	69 in	155 lbs	4.0 1	165 watts	167 watts

(subject)	Oxygen consumption at threshold	Heart rate at threshold
A1	2.3 1	98 bpm
A2	2.6 1	121 bpm
A3	2.2 1	110 bpm
B	2.15 1	136 bpm
C	2.0 1	120 bpm
D	2.0 1	133 bpm

squares, planometry, or by cutting out and weighting the area. If the subject will perform two work phases above the threshold, the areas between can be extrapolated to zero to give the threshold itself, as shown in *Figure 3*.

In *Figure 3* all the work loads are shown with each blood lactate concentration and the excess ventilation plotted. The curve for the excess ventilation is extrapolated to zero and the curve for the blood lactate concentration is extrapolated to the slowly rising component of blood lactate. In each case a linear extrapolation was used.

The results of six separate tests on four subjects are given in *Table 1* along with personal data on each subject. The results of stress tests on subject A by the continuous increment method have been published by us previously.[6]

The three tests on subject A reported here were performed about six months apart. It may be seen in *Table 1* that the work load at the threshold for subject A is well conserved, but that the heart rate or oxygen consumption at threshold is not. The work loads for the anaerobic thresholds and lactic acid thresholds thus obtained are plotted in *Figure 4*; if the two thresholds are identical the curve for these points should have a slope of one and pass through the origin. The least squares fit of these data give a straight line of slope 1.02, passing through y = 3.8. The standard deviation of the points is 1.5 watts with the correlation coefficient r = 0.994 for N = 6.

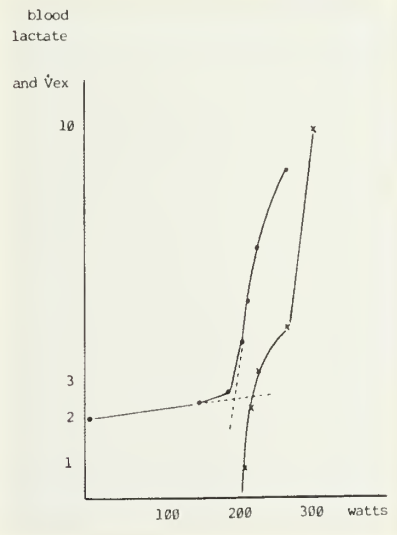


FIGURE 3: Blood lactate -o- and $\dot{V}$ex -x- plotted versus work load. Lactate is in mmoles per liter and $\dot{V}$ex is in arbitrary units.

Thus we conclude from our observations so far that the anaerobic threshold as obtained from the ventilation data cannot be distinguished from the lactic acid threshold, and indeed may be identical. Therefore, we suggest that the ventilation excess is a legitimate method for obtaining accurate measurements of the lactic acid threshold.

Moreover, the method has several attractive features. It is noninvasive because it does not require the drawing of blood. The method can be utilized during the stress test while the subject is on each recovery phase. In our experience, the continuation of the test to two intervals above the threshold is sufficient to establish the position of the threshold, and therefore it

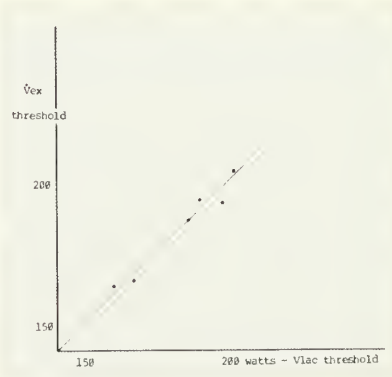


FIGURE 4: Plot of $\dot{V}$ex threshold versus Vlac threshold with the line of identity drawn in.

is not necessary to ask the subject to go to high work levels. This is clearly an advantage to subjects who would have difficulties at higher work loads due to age, injury, or illness.

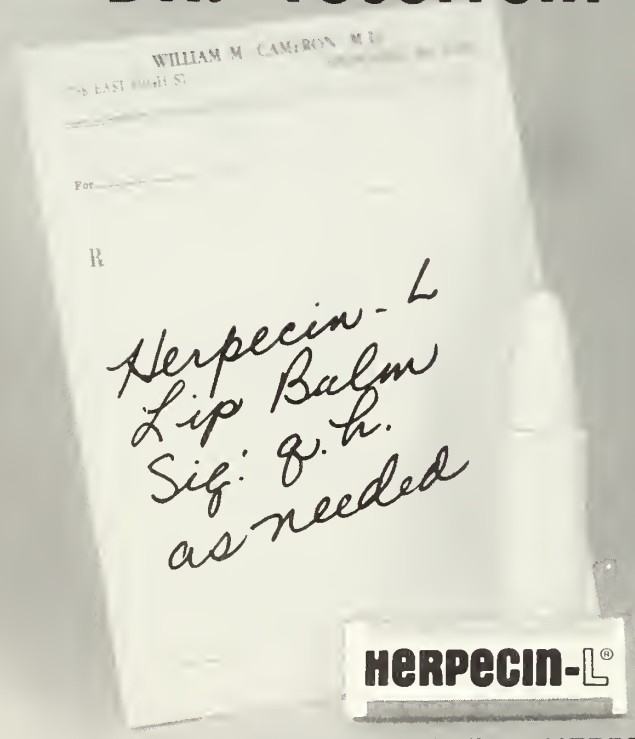
We have made one unexpected observation on our subjects. The time after the work phase of the interval for which the ventilation excess reached maximum was one to two minutes for subjects A, B, and C. Subject D, however, reached his maximum ventilation excess at all work levels six minutes after each work phase was over. There were no other obvious differences between the subjects.

We plan to investigate this difference further. We also plan to extend our observations to thresholds obtained on a treadmill and to correlate these with those from the ergocycle.

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Clinical Utility of Anorectal Function Testing

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THIS BRIEF REVIEW outlines clinical approaches to severe idiopathic constipation and to fecal incontinence in adults with emphasis on the recently described importance of evaluating anorectal function in these disorders.

We will first consider constipation. Deciding which patients should undergo evaluation is the first task. Constipation has been difficult to define quantitatively since patients report the symptom according to their perception of normal bowel motion. Frequency is the easiest aspect of bowel motion to quantitate, and several studies have shown that normal subjects pass at least three bowel movements per week.[1] Some patients with bowel movement frequencies of two per week may benefit from anorectal function studies. Some individuals with very few bowel movements are asymptomatic or may be comfortable with intermittent use of laxatives, while others with a higher frequency are symptomatic and may require evaluation.

Constipation is a symptom and not a diagnosis. Constipation is a side effect of a variety of drugs and a symptom of numerous endocrine and metabolic disorders, structural abnormalities of the colon and anus, central nervous system disorders, neuropathies and irritable bowel syndrome.[2]

Considering this broad differential diagnosis, the initial history and physical examination in a patient with constipation should be directed toward elucidating possible primary causes. However, despite careful searching, including barium enema or colonoscopy, an underlying cause is often not discovered for severe constipation. In this instance, an effort is often made to assign the patient to one of three groups: 1) Hirschsprung's disease (congenital megacolon), 2) idiopathic megacolon or 3) idiopathic slow-transit constipation.

Megacolon is defined radiographically as a rectum of greater than 6.5 cm diameter at the pelvic brim on the lateral view.[3] In older adults megacolon is seldom idiopathic, as it can usually be ascribed to chronic constipation of any of a variety of etiologies.

Idiopathic megacolon in children and young adults must be differentiated from Hirschsprung's disease (congenital megacolon). Hirschsprung's disease is caused by a congenital absence of ganglion cells in a segment of colon beginning at the anal canal and extending a variable distance into the colon. The aganglionic segment is constricted and causes dilatation and relative or absolute obstruction of the proximal normal colon. Most clinical features, including barium enema, are not highly accurate in differentiating Hirschsprung's disease from idiopathic megacolon.

The diagnosis of Hirschsprung's has traditionally rested on demonstration of aganglionosis by rectal biopsy. Biopsies for Hirschsprung's should be taken through a rigid sigmoidoscope using large forceps. The optimal area for biopsy is located 3 centimeters above the pectinate line in older children and adults. This location is chosen because normal individuals have a 1 to 2 centimeter hypoganglionic region just above the pectinate line in which the frequency of ganglion cells is reduced.[4] Biopsies taken from the normal hypoganglionic zone could lead to a false-positive diagnosis of Hirschsprung's.

In expert hands rectal biopsy is accurate in 85-95% of patients with Hirschsprung's disease.[5] In many centers rectal biopsy is being replaced by anorectal manometry for the diagnosis of Hirschsprung's.[6] During anorectal manometry Hirschsprung's patients fail to demonstrate normal reflex internal sphincter relaxation with rectal distention and often exhibit internal sphincter contraction. When properly performed the accuracy of anorectal manometry for the diagnosis of Hirschsprung's disease is very close to 100%, and the study should be performed on all patients over the age of one month in whom the diagnosis is suspected.

Idiopathic slow-transit constipation occurs predominantly in young women with the onset of constipation between ages 10 and 40. The barium enema is normal and colonic transit time measured by following swallowed radiopaque markers is delayed in most cases.

Three types of physiologic abnormalities have been described recently in these young women with severe constipation: 1) decreased colonic motility, 2) impaired urge to defecate during rec-

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TABLE 1
Incidence of the Three Principal Abnormalities in 25 Women with Severe Idiopathic Constipation*

	Number
Abnormal colonic motility	19
Sensory defect	17
Disordered pelvic floor motility	13

* From reference 10

TABLE 2
Clinical Evaluation of Severe Constipation of Unknown Cause

Colonic transit time
Anorectal manometry with external sphincter EMG
Measurement of rectal sensitivity
Passage of simulated stools

tal distention and 3) disordered pelvic floor motility during defecation. Poor colonic motility occurs in 80% of these patients and is defined as retention of more than 80% of swallowed radiopaque markers on an abdominal x-ray taken five days after ingestion.[7] Failure of colonic motility to increase when a surface acting cathartic such as bisacodyl is applied to colonic mucosa correlates well with slow marker transit.[8]

Seventy percent of women with idiopathic slow-transit constipation demonstrate an impaired urge to defecate with rectal distention.[9,10] These same women have a normal threshold for rectal sensation (minimum balloon volume they can detect in the rectum) and a normal pain response with rectal distention. However, balloon volumes of 500 cc and more frequently do not lead to a defecation urge in these patients even though they are in significant pain. This observation has led to the suggestion that neural pathways for rectal sensation and pain differ from pathways carrying information needed for defecation, and that the latter are abnormal in women with idiopathic slow-transit constipation.[10]

The third physiologic abnormality described in idiopathic slow-transit constipation is disordered pelvic floor motility. Using anorectal manometry and external anal sphincter electromyogram (EMG), investigators have shown that approximately 50% of these patients contract rather than relax their external anal sphincter during attempted defecation.[9,10] The dysmotility phenomenon correlates fairly well[10] with inability to defecate simulated stools (water filled balloons). The identical finding was described recently in a group of children with encopresis.[11] Since external sphincter responses are learned and not innate,[12] this abnormality of defecation dynamics may be amenable to biofeedback therapy.

In a recent study of 25 consecutive young women with idiopathic slow-transit constipation,[10] Shouler and Keighley found that all 25 had at least one of the three abnormalities (*Table 1*), most patients had two of three and several patients had all three abnormalities. Thus, a battery of studies directed to detect all three findings should be very sensitive for idiopathic slow-transit constipation, and will help to direct specific therapy to the abnormal physiology in a given patient. Based on these results, *Table 2* demonstrates the minimal routine clinical evaluations of severe constipation of unknown cause after careful history, physical examination and colon imaging studies.

Fecal incontinence in non-demented patients is often due to anal surgery, episiotomy or deep perineal tears during childbirth, anal disorders such as Crohn's disease or rectal prolapse, or neuropathy, particularly diabetic neuropathy.

TABLE 3
Clinical Evaluation of Fecal Incontinence

Saline continence test
Anorectal manometry
24-hour stool volume

The most sensitive measure of fecal incontinence is the saline continence test, which when done in standard fashion clearly separates incontinent patients from continent patients with diarrhea.[13] Anorectal manometry is useful since it defines a subgroup of incontinent patients with a weak anal sphincter who may benefit from biofeedback therapy[14] or surgery.[15] Estimation of anal sphincter strength by digital rectal exam should not be relied on since it correlates very poorly with the saline continence test and with anal canal manometric measurements.

Some patients with fecal incontinence have normal anal sphincter function which is overwhelmed by voluminous diarrhea.[13] Thus, a 24-hour stool volume measurement is often informative in the evaluation of fecal incontinence. Schuster has found[14] that biofeedback therapy using anorectal manometry is very successful for fecal incontinence, particularly post-surgical incontinence. Formal evaluation of anorectal function is always indicated if surgical external sphincter repair or the Park's procedure are being considered. *Table 3* lists the components of a standard evaluation of anorectal function for non-demented incontinent patients.

In summary, recent investigations have increased our understanding of severe constipation and fecal incontinence. Anorectal function testing allows the abnormal physiology in an

individual patient to be characterized and directs specific medical or surgical therapy. In many cases of fecal incontinence and when disordered pelvic floor motility is the cause of severe constipation, biofeedback therapy using anorectal manometry is a low-risk, often highly successful form of treatment.

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Dystonia: Therapy with High Dosage Anticholinergic Medication

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DYSTONIA IS characterized by sustained, twisting involuntary movements in the absence of other neurologic signs. Even though the slow, sustained, twisting movements are considered classic for dystonia, faster movements are fairly frequent during earlier stages of the disease. These faster movements may at times resemble other classic involuntary movements, such as tremor, chorea, myoclonus, tics and hemiballismus.

The faster dystonic movements differ from those above in that they have a twisting or turning component and are always seen on a background of classic slow dystonic movements. The childhood onset of dystonia usually begins in the lower extremities and becomes generalized as the disease progresses. Adult onset dystonia usually begins in the arms (writer's cramp), neck (torticollis), face and jaw (Meige's Syndrome, Brueghel's Syndrome, Blepharospasm-oromandibular dystonia), or rarely in vocal cords (dysphonea). The disease tends to remain focal or segmental in adults.

The treatment of dystonia is difficult. Medical therapies, including L-dopa,[1,4,5] carbamazepine,[6,7] bromocriptine,[8,9] tetrabenazine,[10] and diazepam[11] usually benefit only a few and then only briefly. Anticholinergic drugs have been used for many years to treat dystonia,[12,13] but in conventional doses they have had only limited success. Recent work has suggested that a greater response rate may be seen with higher anticholinergic dosages. The purpose of this presentation is to describe a patient with severe oromandibular dystonia who successfully responded to these higher doses of anticholinergic agents.

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Case Report

A 63-year-old white man initially presented with the chief complaint of jerking in the neck and feeling nervous for about six months. His general physical examination was normal except for mild hypertension. The neurological examination revealed mild to moderate slow as well as fast dystonic movements of the face, jaw and neck. The neurologic work-up did not reveal a cause for the dystonia.

He was initially treated with trihexyphenidyl p.o. 2 mg. tid, diazepam 5 mg. p.o. qid, and haloperidol 2 mg. tid without any significant improvement. He was lost to follow-up at this time. A year later, he again sought help at the insistence of his family because of a significant deterioration in his condition. It was reported that he had tried various medications including phenytoin, phenobarbital, clonazepam, amitriptyline, diazepam and haloperidol prescribed by a neurologist without improvement in his condition.

The neurological examination at this time showed severe dystonic movements involving the muscles of the face, jaw, neck and shoulder girdle. His extremities were rigid. All his medications for the movement disorder were discontinued. Therapy was begun with diazepam, which was gradually increased to 70 mg. per day with marked improvement in the rigidity but not the dystonia. He was then treated with high doses of trihexyphenidyl (15 mg/d) and ethopropazine (600 mg/d), with remarkable improvement in both rapid and slow dystonic movements within about two weeks. The patient then became disoriented, irritable, and illogical at 600 mg. of ethopropazine. When the dosage was decreased to 400 mg. a day, his dystonic movements remained controlled and his mental status improved dramatically.

Discussion

Recently, a few studies[14,15,16] have shown that high doses of anticholinergics are effective in the treatment of dystonia. In 1983, Fahn[14] reported the results of high dose anticholinergic therapy in 23 children and 52 adults with dystonia. Results of a similar study by Marsden, *et al*[15] were reported in 1984. Between these two studies, there were 46 children and 69 adults with dystonia.

Among the 46 children, the dystonia was generalized in 23; segmental (dystonia limited to a single segment or to two or three contiguous segments) in 16; hemidystonia in 6; and multifocal (two or more noncontiguous parts) in 1. In some children, the dystonia was secondary to encephalitis, meningitis, kernicterus, or birth trauma. However, in the majority, it was either familial or sporadic. The dystonia was moderate to severely advanced in 43 patients resulting in pro-

nounced functional impairment.

In the 69 adults, the dystonia was generalized in 20; segmental in 21; focal in 23; hemi in 4; and laryngeal in 1. In seven patients, the dystonia was secondary to trauma (2), infection (3), and stroke (2). The dystonia was moderate to severe in 56 patients with considerable functional impairment.

All the children were treated with trihexiphenidyl. The average dose was 36.2 mg/day and the range was 8-80 mg/day. Significant improvement was noted in 26 (56.5%), mild improvement in 4 (8.6%), and no improvement in 16 (34.7%). Among the 16 patients who did not improve, there were 3 patients with birth injury, 2 with head injury, 1 with infection, 3 had previous stereotaxic surgery, and 1 patient withdrew from the study.

Among adults, all patients in Marsden's group received trihexiphenidyl. The average dose was 36.1 mg/day and the range was 4-130 mg/day. Fahn used trihexiphenidyl in some and ethopropazine in others in an attempt to learn whether a different anticholinergic agent would be better tolerated. The average dose of trihexiphenidyl was 24.4 mg/day (range 6-50) and the average dose of ethopropazine was 350 mg/day (range 100-800). Twenty-seven patients (39.1%) showed significant improvement. Burke, *et al*[16] treated 31 patients who ranged in age from 9-32 years with 40 mg/day (range 5-120 mg/day) of trihexiphenidyl, with remarkable improvement in 61%.

Adverse effects in children were infrequent and not serious. Peripheral effects of blurred vision, dry mouth, and urinary difficulty were usually transient or easily corrected by reduction of dosage. Central adverse effects were more troublesome and consisted of forgetfulness, weight loss, personality changes and sleep alterations. These required reduction in dose or discontinuation of medication. Adults tolerated high dose anticholinergic treatment less well than children because of the adverse effects. It was not clear from this one study that there was any advantage for either ethopropazine or trihexyphenidyl.

Based on these observations, the anticholinergic agents seem to be most effective for dystonia in a significant number of patients, particularly in children. The greater efficacy in children may, in part, be due to better tolerance of high dosages.

It is recommended to begin therapy with trihexyphenidyl 0.5 mg/day, and increase the dose every 1-2 weeks to 30 mg/day; given in four divided doses. Benefit may be delayed for several weeks and a 30 mg. daily dose should be continued for a few weeks before further increase. After a period of observation, the dose may be gradually increased, depending on tolerance and efficacy. Since the full benefit from these gradual increases may not be realized for weeks or months, an extended therapeutic trial should be planned.

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Health and Safety Consequences of Shift Work

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"I got a good night's sleep."
—George Schulz, explaining why he seemed more optimistic the day following the Iceland summit.

FROM THE BEGINNING of human evolution, the cycling of human rest and activity has, by necessity, been tightly linked to the earth's cycling of night and day, as has that of most other biological species. However, since World War II, industrialized societies increasingly have required human activities around the clock. In fact, 27% of the U.S. work force is now exposed to some type of shift work. Unfortunately, many of these workers find it difficult to adapt to this chronic uncoupling of rest/activity cycling from social and day/night cycling.

It is now apparent that the resulting dysequilibrium of fundamental circadian rhythms can result in a predictable constellation of symptoms termed the "Shift Maladaption Syndrome." This syndrome is characterized by disturbances in sleep/wake functioning manifested by a combination of chronic insomnia and marked sleepiness during waketime. Chronic malaise, depression, gastrointestinal dysfunction and possibly acceleration of cardiovascular disease also are common symptoms of this recently recognized syndrome.[1,2]

Sleep/wake dysfunctioning and malaise caused by circadian rhythm dysequilibrium are common in our society. Most of us have experienced the symptoms seen chronically in the Shift Maladaption Syndrome on a more acute basis in the form of the Jet Lag Syndrome and the ubiquitous Monday Morning Blues.

Since many of the basic features of human sleep/wake cycling or "circadian rhythm" are now known,[3] it has become possible to understand the above consequences of their desynchronization from day/night and social cycles. Additionally, it is now understood why some shift designs are likely to cause problems, and how these problems can be minimized by application of basic circadian rhythm principles to shift design and selection of rotating or night shift workers.

Basic Circadian Physiology

Humans and most other species demonstrate a rest/activity cycle length of about 24 hours under natural day/night and normal social conditions. However, when isolated from day/night, social and other time cues, people consistently demonstrate a longer sleep/activity cycle length of about 25.3 hours.[3] Most humans are therefore under continuous "pressure" from their "inner clocks" to go to bed (and arise) 1.3 hours later each day.

Because of relatively powerful social cues (work schedules), most of us are able to advance our "inner clocks" daily during the week. However, during weekends and vacations, we have all experienced a relentless tendency to delay sleep and waketime by about one hour per day. When indulged, this one hour per day "drift around the clock" causes our inner sleep/wake schedules to be several hours out of synchrony with society's 24-hour schedule by Monday morning.

For workers with constantly changing work schedules, this sleep/wake dysequilibrium never resolves and results in a chronic form of the Monday Morning Blues: the Shift Maladaption Syndrome. People on rotating shifts are obviously at risk for this. "Permanent" night shift workers also are at risk since almost all night shift workers revert to a normal daytime schedule on weekends for family and social reasons. About 30% of such workers suffer from the Shift Maladaption Syndrome.[4]

Disturbances in sleep/wake functioning are the most prominent symptoms. About 60% of rotating and night shift workers report chronic sleep maintenance insomnia. This insomnia is not due solely to increased daytime environmental light and sound stimulation, since laboratory studies under sound/light insulated conditions indicate that the duration of human sleep is inherently minimalized when begun from 7 a.m. to noon.[5]

This inadequate sleep results in an accumulative sleep deprivation and decreased waketime alertness. Since shift workers are responsible for increasingly sophisticated tasks, such as monitoring nuclear powerplants, it is troublesome to realize that 50% of night shift workers report regularly falling asleep on the job, particularly during the night shift (*Table*), with an

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TABLE

Percent Workers Reporting Falling Asleep on Job at Least Weekly

INDUSTRY	SCHEDULE	START HOUR	DAY	EVENING	NIGHTS	TOTAL
Paper	5D-2X (straight days)	0730	8	n/a	n/a	n/a
Paper	5D-2X-5E-2X-5N-2X	0720	5	5	22	22
Petrochemical	7D-2X-7N-4X-7E-1X	0630	39	8	39	39
Paper	7D-4X-7E-2X-7N-1X	0730	8	13	40	42
Paper	7D-7N-7E	0700	25	19	50	53
Oil Refinery	5D-2X-5N-2X-5E-2X	0630	24	15	58	60
Manufacturing	5D-2X-5N-1X-5E-2X	0800	35	36	67	72
Utility	50N-2X (3 mo rotate)	0800	11	16	59	73
TOTAL	(X = day off)		23	20	53	56

(Coleman RM: Falling asleep at work: A problem for continuous operations. *Sleep Research*, 15:265, 1986. Reprinted with permission).

attendant increase in industrial accidents. Night and shift workers also fall asleep when off the job, and are more prone to automobile accidents. Depression and malaise frequently result from a combination of these chronic sleep/wake problems and the social isolation caused by desynchronization with society's rhythm.

Gastrointestinal symptoms such as anorexia and dyspepsia are also prevalent in night shift workers. The incidence of peptic ulcer disease seems to increase after five years of shift working, implying an accumulative effect. The cause of this probably relates to disordered circadian rhythms in digestive functioning, as well as disrupted meal scheduling.

Some epidemiological studies are now suggesting an increase in acute myocardial infarctions in chronic shift workers when compared to age and risk factor matched controls. This seems especially true of workers on non-physiological types of shifts (see below).

Determinants of the Shift Maladaption Syndrome

There now appear to be several factors that determine the severity and duration of the Shift Maladaption Syndrome. The most important seem to be: 1) shift design and 2) individual adaptability to changing sleep/wake cycles.

Some rotating and night shift designs are more likely to cause the Shift Maladaption Syndrome. This is because our intrinsic 25.3 hour sleep/wake cycle makes it much easier to adjust to a sudden sleep/wake shift change that requires prolongation of wakefulness for adaptation than it is to a shift that requires earlier sleep onset for adaptation.

Rapid jet travel across time zones is one cause of such a sudden shift in sleep/wake scheduling. Because of the bias of our "inner clocks," westward flight is less likely to cause the acute malaise, fatigue and sleep disturbances of the jet lag syndrome than is the same amount of eastward flight—which may explain the Secretary of State's comment above.

Similarly, it has been demonstrated that shift rotations in harmony with this bias (i.e., days-evenings-nights) cause less sleep/wake and mood disturbances, sleeping on the shift, job-related accidents and decline in productivity than do shift designs that ignore this bias (i.e., days-nights-evenings).[6]

Individual factors are also important. For example, most sleep/wake disorders[7,8] significantly impair adaptability to a change in sleep/wake scheduling. Indeed, many patients with narcolepsy first seek medical attention after a shift change has markedly exacerbated their waketime somnolence. Additionally, our ability to adjust to a shift change decreases with age. There is also evidence that each abrupt change in our sleep/wake schedules decreases our ability to adjust to subsequent changes.

These last two phenomenon explain the paradoxical finding that sleep/wake disturbances seemingly *INCREASE* with each year of shift work,[9] rather than decrease with time as might be expected.

Finally, it seems that late risers who function best in the latter part of the day ("Night Owls") tolerate rotational and night shift work better than early risers who function best in the first half of the day ("Morning Larks"). The reason for this difference is only speculative at this time, but may result from intrinsic differences in "resettability" of the intrinsic circadian "clock."

Summary

Currently, about 27% of American workers are exposed to chronic rotational or night shift work. The resultant desynchronization of their sleep/wake cycles with night/day and social cycling causes up to 30% of these workers to manifest a constellation of symptoms known as the Shift Maladaption Syndrome. This syndrome consists of a characteristic combination of chronic insomnia and excessive wake-time somnolence as well as long-term gastrointestinal and possibly cardiovascular symptoms. Simple principles of human circadian rhythm are presented to explain the occurrence of this syndrome and how attention to shift design and individual shift worker characteristics can help ameliorate it.

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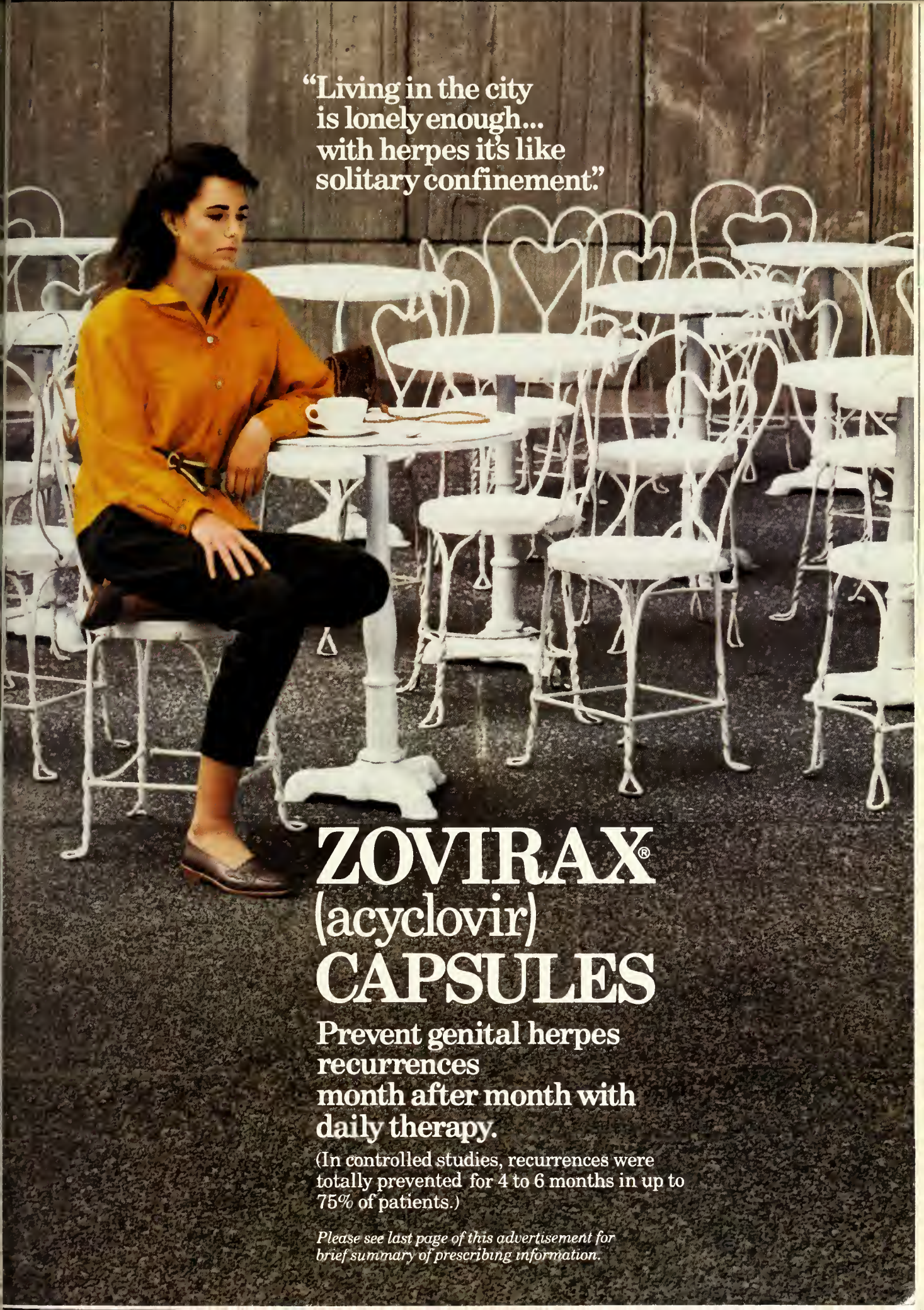
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Double-blind, placebo-controlled studies have demonstrated that orally administered Zovirax significantly reduced the duration of acute infection (detection of virus in lesions by tissue culture) and lesion healing. The duration of pain and new lesion formation was decreased in some patient groups. The promptness of initiation of therapy and/or the patient's prior exposure to Herpes simplex virus may influence the degree of benefit from therapy. Patients with mild disease may derive less benefit than those with more severe episodes. In patients with extremely severe episodes, in which prostration, central nervous system involvement, urinary retention or inability to take oral medication require hospitalization and more aggressive management, therapy may be best initiated with intravenous Zovirax.

Recurrent Episodes:

Double-blind, placebo-controlled studies in patients with frequent recurrences (6 or more episodes per year) have shown that Zovirax Capsules given for 4 to 6 months prevented or reduced the frequency and/or severity of recurrences in greater than 95% of patients. Clinical recurrences were prevented in 40 to 75% of patients. Some patients experienced increased severity of the first episode following cessation of therapy; the severity of subsequent episodes and the effect on the natural history of the disease are still under study.

The safety and efficacy of orally administered acyclovir in the suppression of frequent episodes of genital herpes have been established only for up to 6 months. Chronic suppressive therapy is most appropriate when, in the judgement of the physician, the benefits of such a regimen outweigh known or potential adverse effects. In general, Zovirax Capsules should not be used for the suppression of recurrent disease in mildly affected patients. Unanswered questions concerning the human relevance of *in vitro* mutagenicity studies and reproductive toxicity studies in animals given very high doses of acyclovir for short periods (see Carcinogenesis, Mutagenesis, Impairment of Fertility) should be borne in mind when designing long-term management for individual patients. Discussion of these issues with patients will provide them the opportunity to weigh the potential for toxicity against the severity of their disease. Thus, this regimen should be considered only for appropriate patients and only for six months until the results of ongoing studies allow a more precise evaluation of the benefit/risk assessment of prolonged therapy.

Limited studies have shown that there are certain patients for whom intermittent short-term treatment of recurrent episodes is effective. This approach may be more appropriate than a suppressive regimen in patients with infrequent recurrences.

Immunocompromised patients with recurrent herpes infections can be treated with either intermittent or chronic suppressive therapy. Clinically significant resistance, although rare, is more likely to be seen with prolonged or repeated therapy in severely immunocompromised patients with active lesions.

CONTRAINDICATIONS: Zovirax Capsules are contraindicated for patients who develop hypersensitivity or intolerance to the components of the formulation.

WARNINGS: Zovirax Capsules are intended for oral ingestion only.

PRECAUTIONS: General: Zovirax has caused decreased spermatogenesis at high doses in some animals and mutagenesis in some acute studies at high concentrations of drug (see PRECAUTIONS — Carcinogenesis, Mutagenesis, Impairment of Fertility). The recommended dosage and length of treatment should not be exceeded (see DOSAGE AND ADMINISTRATION).

Exposure of Herpes simplex isolates to acyclovir *in vitro* can lead to the emergence of less sensitive viruses. The possibility of the appearance of less sensitive viruses in man must be borne in mind when treating patients. The relationship between the *in vitro* sensitivity of Herpes simplex virus to acyclovir and clinical response to therapy has yet to be established.

Because of the possibility that less sensitive virus may be selected in patients who are receiving acyclovir, all patients should be advised to take particular care to avoid potential transmission of virus if active lesions are present while they are on therapy. In severely immunocompromised patients, the physician should be aware that prolonged or repeated courses of acyclovir may result in selection of resistant viruses which may not fully respond to continued acyclovir therapy.

Drug Interactions: Co-administration of probenecid with intravenous acyclovir has been shown to increase the mean half-life and the area under the concentration-time curve. Urinary excretion and renal clearance were correspondingly reduced.

Carcinogenesis, Mutagenesis, Impairment of Fertility: Acyclovir was tested in lifetime bioassays in rats and mice at single daily doses of 50, 150 and 450 mg/kg given by gavage. There was no statistically significant difference in the incidence of tumors between treated and control animals, nor did acyclovir shorten the latency of tumors. In 2 *in vitro* cell transformation assays, used to provide preliminary assessment of potential oncogenicity in advance of these more definitive life-time bioassays in rodents, conflicting results were obtained. Acyclovir was positive at the highest dose used in one system and the resulting morphologically transformed cells formed tumors when inoculated into immunosuppressed, syngeneic, weanling mice. Acyclovir was negative in another transformation system considered less sensitive.

In acute studies, there was an increase, not statistically significant, in the incidence of chromosomal damage at maximum tolerated parenteral doses of 100 mg/kg acyclovir in rats but not Chinese hamsters; higher doses of 500 and 1000 mg/kg were clastogenic in Chinese hamsters. In addition, no activity was found after 5 days dosing in a dominant lethal study in mice. In 6 of 11 microbial and mammalian cell assays, no evidence of mutagenicity was observed. At 3 loci in a Chinese hamster ovary cell line, the results were inconclusive. In 2 mammalian cell assays (human lymphocytes and L5178Y mouse lymphoma cells *in vitro*), positive responses for mutagenicity and chromosomal damage occurred, but only at concentrations at least 400 times the acyclovir plasma levels achieved in man.

Acyclovir has not been shown to impair fertility or reproduction in mice (450 mg/kg/day, p.o.) or in rats (25 mg/kg/day, s.c.). At 50 mg/kg/day s.c. in the rat, there was a statistically significant increase in post-implantation loss, but no concomitant decrease in litter size. In female rabbits treated subcutaneously with acyclovir subsequent to mating, there was a statistically significant decrease in implantation efficiency but no concomitant decrease in litter size at a dose of 50 mg/kg/day. No effect upon implantation efficiency was observed when the same dose was administered intravenously. In a rat peri- and postnatal study at 50 mg/kg/day s.c., there was a statistically significant decrease in the group mean numbers of corpora lutea, total implantation sites and live fetuses in the F_1 generation. Although not statistically significant, there was also a dose related decrease in group mean numbers of live fetuses and implantation sites at 12.5 mg/kg/day and 25 mg/kg/day, s.c. The intravenous administration of 100 mg/kg/day, a dose known to cause obstructive nephropathy in rabbits, caused a significant increase in fetal resorptions and a corresponding decrease in litter size. However, at a maximum tolerated intravenous dose of 50 mg/kg/day in rabbits, there were no drug-related reproductive effects.

Intraperitoneal doses of 320 or 80 mg/kg/day acyclovir given to rats for 1 and 6 months, respectively, caused testicular atrophy. Testicular atrophy was persistent through the 4-week postdose recovery phase after 320 mg/kg/day; some evidence of recovery of sperm production was evident 30 days postdose. Intravenous doses of 100 and 200 mg/kg/day acyclovir given to dogs for 31 days caused aspermatogenesis. Testicles were normal in dogs given 50 mg/kg/day, i.v. for one month.

Pregnancy: ***Teratogenic Effects:*** Pregnancy Category C. Acyclovir was not teratogenic in the mouse (450 mg/kg/day, p.o.), rat (50 mg/kg/day, s.c.) or rabbit (50 mg/kg/day, s.c. and i.v.). There are no adequate and well-controlled studies in pregnant women. Acyclovir should not be used during pregnancy unless the potential benefit justifies the potential risk to the fetus. Although acyclovir was not teratogenic in animal studies,. the drug's potential for causing chromosome breaks at high concentration should be taken into consideration in making this determination.

Nursing Mothers: It is not known whether this drug is excreted in human milk. Because many drugs are excreted in human milk, caution should be exercised when Zovirax is administered to a nursing woman. In nursing mothers, consideration should be given to not using acyclovir treatment or discontinuing breastfeeding.

Pediatric Use: Safety and effectiveness in children have not been established.

ADVERSE REACTIONS — Short-Term Administration: The most frequent adverse reactions reported during clinical trials were nausea and/or vomiting in 8 of 298 patient treatments (2.7%) and headache in 2 of 298 (0.6%). Less frequent adverse reactions, each of which occurred in 1 of 298 patient treatments (0.3%), included diarrhea, dizziness, anorexia, fatigue, edema, skin rash, leg pain, inguinal adenopathy, medication taste and sore throat.

Long-Term Administration: The most frequent adverse reactions reported in studies of daily therapy for 3 to 6 months were headache in 33 of 251 patients (13.1%), diarrhea in 22 of 251 (8.8%), nausea and/or vomiting in 20 of 251 (8.0%), vertigo in 9 of 251 (3.6%), and arthralgia in 9 of 251 (3.6%). Less frequent adverse reactions, each of which occurred in less than 3% of the 251 patients (see number of patients in parentheses), included skin rash (7), insomnia (4), fatigue (7), fever (4), palpitations (1), sore throat (2), superficial thrombophlebitis (1), muscle cramps (2), pars planitis (1), menstrual abnormality (4), acne (3), lymphadenopathy (2), irritability (1), accelerated hair loss (1), and depression (1).

DOSAGE AND ADMINISTRATION: Treatment of initial genital herpes: One 200 mg capsule every 4 hours, while awake, for a total of 5 capsules daily for 10 days (total 50 capsules).

Chronic suppressive therapy for recurrent disease: One 200 mg capsule 3 times daily for up to 6 months. Some patients may require more drug, up to one 200 mg capsule 5 times daily for up to 6 months.

Intermittent Therapy: One 200 mg capsule every 4 hours, while awake, for a total of 5 capsules daily for 5 days (total 25 capsules). Therapy should be initiated at the earliest sign or symptom (prodrome) of recurrence.

Patients With Acute or Chronic Renal Impairment: One 200 mg capsule every 12 hours is recommended for patients with creatinine clearance $\leq$10 ml/min/1.73/m^2.

HOW SUPPLIED: Zovirax Capsules (blue, opaque) containing 200 mg acyclovir and printed with "Wellcome ZOVIRAX 200"- Bottles of 100 (NDC-0081-0991-55) and unit dose pack of 100 (NDC-0081-0991-56).

Store at 15°-30°C (59°-86°F) and protect from light.

*In controlled studies, recurrences were totally prevented for 4 to 6 months in up to 75% of patients.

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1987 LEGISLATIVE SUMMARY

Lawmakers Digest a Full Plate of Medical Proposals

JULIANNA M. NEWLAND
Director
Government Relations

Diplomacy is the art of saying "nice doggie" until you can find a rock.
—Will Rogers

OUR STATE LAWMAKERS had the unenviable task of sifting through over 200 proposed pieces of legislation in this 105th session that had some effect on the delivery of health care. Some of these proposals were passed into law in their original form and other proposals changed their size and shape numerous times before coming to a rest.

While the areas of education and the state's biennial budget drew the most debate and consternation, including a "special session," medical issues also received their fair share of legislative review.

Medical Malpractice Statute
Subject of Scrutiny

Never a legislative session goes by without the debate over proposed changes to Indiana's Medical Malpractice statute. One proposal (SB 393), which fortunately was not successful, would have changed the statute of limitations for the filing of medical malpractice claims from the current two years from the date of occurrence to two years from the date of discovery. The ISMA and other physician representatives testified before the Senate Judiciary Committee against such a proposal. The committee members chose not to approve this measure. In a similar vein, HB 1276 which would have included high schools under the Medical Malpractice Act and HB 1189 which would have required a physician's license to be permanently revoked if the physician receives two or more adverse adjudicated malpractice decisions, did not receive legislative consideration. Two proposals which were adopted into law were HEA 1210 which includes nursing homes and certain not-for-profit health corporations under the medical malpractice statute; and HEA 1857 which allows the Insurance Commissioner to increase the surcharge based on actuarial studies to keep the Patient's Compensation Fund solvent and to have claims less than $15,000 reported to him to track this information.

Governor Orr vetoed SB 375 which would have allowed prejudgment interest in civil tort claims. This would not have affected the Patient's Compensation Fund but would have affected claims less than $100,000.

"Trips" Proposal
Three Times Revisited

The use, prescribing, and dispensing of prescription drugs was a controversial issue in this session. This year, as in the past, the ISMA was successful in the defeat of legislation which would have limited the physician's ability to dispense medications from the office.

HB 1802, supported by the Orr Administration and law enforcement, would have required prescriptions for Schedule II drugs to be written on a "triplicate" form with one copy sent to the state to computerize the information for purposes of tracking and identifying over-prescribers and abusers of these drugs. This measure was defeated in the House Public Health Committee. The issue later was amended into another bill in the Senate and sent to a conference committee. After repeated deliberations with several interested parties, the proposal was charged to review by a study committee composed of representatives of the ISMA, pharmacy, law enforcement, the governor's office, and many others. This committee is to study the issue of a multiple prescription program as well as the overall prescription drug diversion problems and to make recommendations to the legislature and the Controlled Substances Advisory Committee. Other drug-related measures adopted by the lawmakers include a proposal to establish a Class B misdemeanor for the repackaging of sample drugs for the purposes of sale and the sale of sample drugs beyond the expiration date. In another measure, Dronabinol will be moved from Schedule I to Schedule II in compliance with federal regulations.

Tobacco-Free Society
Efforts Successful

Legislation supported by the Indiana Coalition for a Tobacco-Free Society (spearheaded by the ISMA) to establish designated non-smoking areas in government buildings, hospitals, health facilities, and schools (HEA 1007) was signed into law. Legislation to increase the minimum age for the sale of tobacco to minors from age 16 to age 18 was passed into law. Also legislation to increase the cigarette tax was passed into law.

Medicaid to Undergo Managed Care Concept

A "case manager" program utilizing primary care physicians under Medicaid was adopted by the lawmakers. Primary care physicians may contract with the state as a managed care provider and the patient is to select a primary care physician for a one-year period.

Prevention of AIDS Debated

AIDS was the subject of lengthy debate in several legislative forums. Two proposals to require a mandatory pre-marital AIDS test were defeated. One measure regarding AIDS passed into law requires the State Board of Health in its literature to school children where AIDS is discussed to stress abstinence from sex and to encourage monogamous relationships. Various legislative proposals to license marriage and family counselors, estheticians, and respiratory therapists were not given legislative consideration as well as a proposal to establish two classes of social workers.

Legislation to provide consistency in the licensing procedures for the current licensing boards was passed into law. This legislation also removes the grace period for the late renewal of the medical license.

Several Proposals Unsuccessful This Session

Other proposals which did not receive legislative consideration were: SB 475 which would have established the Indiana Hospital Cost Containment Commission; legislation (SB 333) to require that accident and sickness insurance policies provide coverage for spinal manipulations; and HB 1139 to require health care providers to report to the local law enforcement agency the names of pregnant minors. Legislation supported by the ISMA to require the use of motorcycle helmets also was unsuccessful.

The ISMA testified against a measure to require a physician to report the name of a child born with a life threatening condition to the hospital administrator who shall forward that information to the county welfare department. This bill was defeated in committee.

A Summary of a Few of the New Laws:

The following is a summary of a few of the other health/medical bills approved by the lawmakers:

SEA 394—allows a physician to be appointed to the governing boards of county hospitals;

SEA 407—establishes a designated

Medical Practice Act Amendments

Licensure, Controlled Substance Registration Renewals Affected

LEGISLATION PASSED in this year's session of the Indiana General Assembly will change licensure renewal and controlled substance registration renewal procedures, effective June 30.

Beginning at the end of this month, all Indiana physicians' licenses will expire on June 30 of each odd year and will be renewed for a period of two years. The renewal fee is $20 per year.

The penalty for failure to register every two years has been reduced from $200 to $50. Physicians who fail to register by June 30 will be subject to the $50 penalty because the three-month grace period has been eliminated. Moreover, those failing to pay the renewal fee by June 30 will be guilty of practicing without a license until the penalty is paid.

In the future, the Medical Licensing Board will send out only one notice to physicians reminding them of the June 30 expiration in each odd year; these notices will be mailed about 45-60 days before the scheduled expiration date.

Also scheduled to expire on June 30 of odd years, beginning this year, is the physician's Indiana controlled substance registration, issued by the Indiana Pharmacy Board. Registrations will be valid for two years, and will be renewed at the same time that the physician's license is renewed. The renewal fee is $20, with a $20 penalty for late renewals.

The Federal Drug Enforcement Administration (DEA Registration) currently requires a yearly renewal but will change to a phased-in, three-year renewal schedule in 1987. The current annual DEA registration fee is $20. The three-year registration will be $60. Every physician should receive a notice from DEA about 45 days before the registration expires; however, it is the physician's responsibility to contact the DEA at the Indianapolis office if the notice is not received.

The address and telephone numbers of these agencies are as follows:

- **Medical Licensing Board of Indiana**, One American Square, Suite 1020, P.O. Box 82067, Indianapolis, Ind. 46282—(317) 232-2960.
- **Indiana Board of Pharmacy**, same as above.
- **Drug Enforcement Administration**, Indianapolis Office, Room 290, 575 N. Pennsylvania St., Indianapolis, Ind. 46204—(317) 269-7977.

fund based on the surcharge assessed on laboratory tests done on newborns to detect in-born errors of metabolism for purposes of follow-up care to these infants;

SEA 409—creates a presumption that a patient's consent to treatment is an informed consent when certain conditions are met;

SEA 233—establishes the Indiana Medical and Nursing Grant Fund for primary care physicians and eligible nurses who locate in shortage areas;

SEA 359—moves the syphilis test requirement from the pre-marital stage to a test to be done during pregnancy;

HEA 1586—requires the attending physician who knows that a deceased person was diagnosed as having a specified communicable disease to place a notice of such on the deceased to notify the person handling the body;

HEA 1010—authorizes the State Board of Health to adopt rules defining communicable and dangerous diseases and to establish reporting requirements;

HEA 1571—prohibits civil actions based on a claim that a person should not have been conceived;

HEA 1702—incorporates the federal Health Care Quality Improvement Act granting civil immunity under state law to medical peer review committees and prohibiting anti-trust actions under these provisions.

Physician of the Day Program Well Received

The lawmakers were very appreciative of the Physician of the Day Program at the Indiana General Assembly co-sponsored by the Indiana Academy of Family Physicians and the ISMA. A thank you to those physicians who volunteered their time with this program.

Grass-Roots Efforts Important

The job of "lobbying" at the State House is always made more effective when physicians talk to their area lawmakers about these proposals pending in the Indiana General Assembly. "Educating" and talking to the lawmakers in their home districts as well as at the State House is extremely useful in communicating the issues of the ISMA and its member physicians. The efforts of all of the physicians and their spouses who help to keep the lawmakers aware of the concerns of the ISMA are very much appreciated.

The Department of Government Relations of the ISMA will be publishing in an upcoming issue of INDIANA MEDICINE the "Digest of Health and Medical Laws of the 1987 Session." This publication will summarize these new laws with a focus on how they affect medical practice and the delivery of health care. If you would like any additional information on these new laws, please contact the ISMA's Department of Government Relations.

This Publication is available in Microform.



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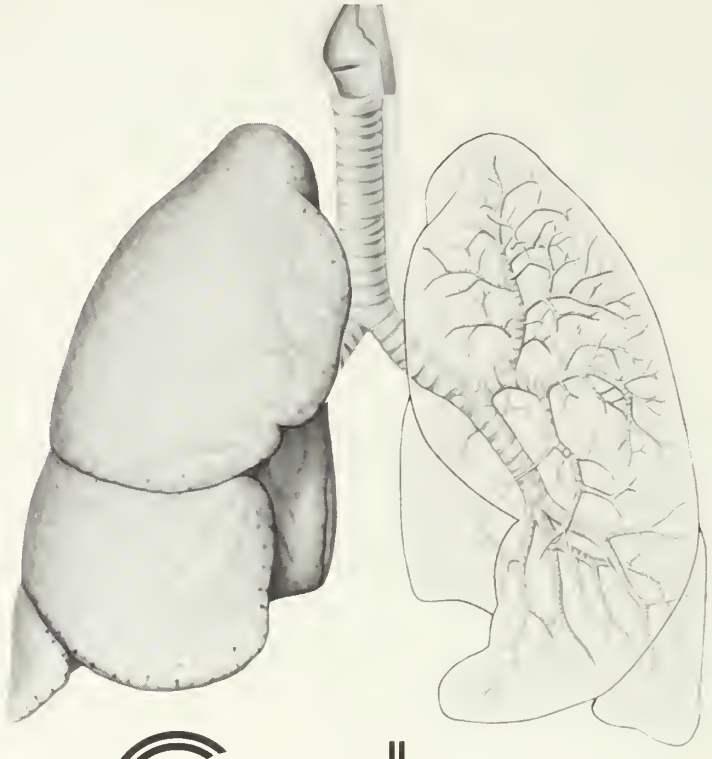
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Haemophilus influenzae, Streptococcus pneumoniae
(ampicillin-susceptible and ampicillin-resistant)

Note: Ceclor is contraindicated in patients with known allergy to the cephalosporins and should be given cautiously to penicillin-allergic patients.

Penicillin is the usual drug of choice in the treatment and prevention of streptococcal infections, including the prophylaxis of rheumatic fever. See prescribing information.

Ceclor® (cefaclor)

Summary. Consult the package literature for prescribing information.

Indications: Lower respiratory infections, including pneumonia, caused by susceptible strains of *Streptococcus pneumoniae, Haemophilus influenzae,* and *Streptococcus pyogenes* (group A β-hemolytic streptococci)

Contraindication:
Known allergy to cephalosporins.

Warnings:
CECLOR SHOULD BE ADMINISTERED CAUTIOUSLY TO PENICILLIN-SENSITIVE PATIENTS. PENICILLINS AND CEPHALOSPORINS SHOW PARTIAL CROSS-ALLERGENICITY. POSSIBLE REACTIONS INCLUDE ANAPHYLAXIS.

Administer cautiously to allergic patients.

Pseudomembranous colitis has been reported with virtually all broad-spectrum antibiotics. It must be considered in differential diagnosis of antibiotic-associated diarrhea. Colon flora is altered by broad-spectrum antibiotic treatment, possibly resulting in antibiotic-associated colitis.

Precautions:
- Discontinue Ceclor in the event of allergic reactions to it.
- Prolonged use may result in overgrowth of nonsusceptible organisms.
- Positive direct Coombs' tests have been reported during treatment with cephalosporins.
- Ceclor should be administered with caution in the presence of markedly impaired renal function. Although dosage adjustments in moderate to severe renal impairment are usually not required, careful clinical observation and laboratory studies should be made.
- Broad-spectrum antibiotics should be prescribed with caution in individuals with a history of gastrointestinal disease, particularly colitis.
- Safety and effectiveness have not been determined in pregnancy, lactation, and infants less than one month old. Ceclor penetrates mother's milk. Exercise caution in prescribing for these patients.

Adverse Reactions: (percentage of patients)
Therapy-related adverse reactions are uncommon. Those reported include:
- Gastrointestinal (mostly diarrhea): 2.5%
- Symptoms of pseudomembranous colitis may appear either during or after antibiotic treatment.
- Hypersensitivity reactions (including morbilliform eruptions, pruritus, urticaria, and serum-sickness-like reactions that have included erythema multiforme [rarely, Stevens-Johnson syndrome] or the above skin manifestations accompanied by arthritis/arthralgia and, frequently, fever): 1.5%; usually subside within a few days after cessation of therapy. Serum-sickness-like reactions have been reported more frequently in children than in adults and have usually occurred during or following a second course of therapy with Ceclor. No serious sequelae have been reported. Antihistamines and corticosteroids appear to enhance resolution of the syndrome.
- Cases of anaphylaxis have been reported, half of which have occurred in patients with a history of penicillin allergy.
- As with some penicillins and some other cephalosporins, transient hepatitis and cholestatic jaundice have been reported rarely.
- Rarely, reversible hyperactivity, nervousness, insomnia, confusion, hypertonia, dizziness, and somnolence have been reported.
- Other: eosinophilia, 2%; genital pruritus or vaginitis, less than 1%; and, rarely thrombocytopenia.

Abnormalities in laboratory results of uncertain etiology
- Slight elevations in hepatic enzymes.
- Transient fluctuations in leukocyte count (especially in infants and children).
- Abnormal urinalysis; elevations in BUN or serum creatinine.
- Positive direct Coombs' test.
- False-positive tests for urinary glucose with Benedict's or Fehling's solution and Clinitest® tablets but not with Tes-Tape® (glucose enzymatic test strip, Lilly).

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Professional Liability: More Than a Pocketbook Issue

PROFESSIONAL LIABILITY continues to be a serious issue across the country. In Indiana, we pride ourselves on having pioneered medical malpractice legislation in 1975. Most experts agree the Indiana Medical Malpractice Act generally has stabilized the malpractice situation in the state in terms of insurance rates. However, the total number of claims in the past six years and the amount of payments from the Patients' Compensation Fund (PCF) continue to rise.

While the Medical Malpractice Act has been fine tuned by the Indiana General Assembly during the last few years, none of the changes has seemed to alleviate what has become an annual need to guard the solvency of the PCF.

For this reason and because new bills continue to be introduced in the General Assembly annually which, if passed, would affect the Medical Malpractice Act and professional liability in Indiana, I have reappointed the ISMA Ad Hoc Advisory Commit tee on Medical Malpractice. Dr. George Lukemeyer chairs this committee, which held its first meeting in April and will meet again in July.

Specifically, the committee will examine the overall number of claims against the fund, the frequency of multiple defendant payments, and the frequency of claims involving the same practitioner. It also will review how and why claims are made from the fund when a medical review panel renders an opinion of no malpractice. The committee's obvious goal is to be as well versed on the malpractice situation as possible and to suggest alternatives when new legislative malpractice proposals are considered, or when new threats to the solvency of the fund occur. Frankly, from our standpoint as physicians, we must determine if the fund's solvency problems are tied to individual members of our profession who have repeatedly had malpractice claims filed against them. Just as important is whether those claims are justified.



Shirley Thompson Khalouf, M.D.
President
Indiana State Medical Association

Last Year the Patients' Compensation Fund Paid Out $1 Million More Than It Took in. Is the Fund's Solvency in Jeopardy and What Can Be Done?

In the case of malpractice, we must take some responsibility for professional peer review. Each year, forces outside of organized medicine continue to erode our practice patterns. Often the rationale includes an unflattering portrayal of physicians as incompetent practitioners who continue to practice. We cannot change that image if we do not examine the facts.

General Assembly Action

Part of the ISMA's role is to continue to monitor the Indiana General Assembly. The 1987 session of the General Assembly considered several bills that had to do with either the Medical Malpractice Act or professional liability. ISMA was instrumental in defeating a bill that would have changed the statute of limitations in malpractice claims from two years from the date of occurrence to two years from the date of discovery. Such a proposal ultimately would have required physicians to carry malpractice insurance even after their retirement. It would have created a nightmare for the defense in finding witnesses and medical records for claims that may have been filed several years after the alleged act. This proposal would have created further instability in the professional liability market as the high risk specialists would attest to. ISMA physicians lobbied strongly against the proposal, and the legislators listened to our concerns.

Two other measures also failed. One

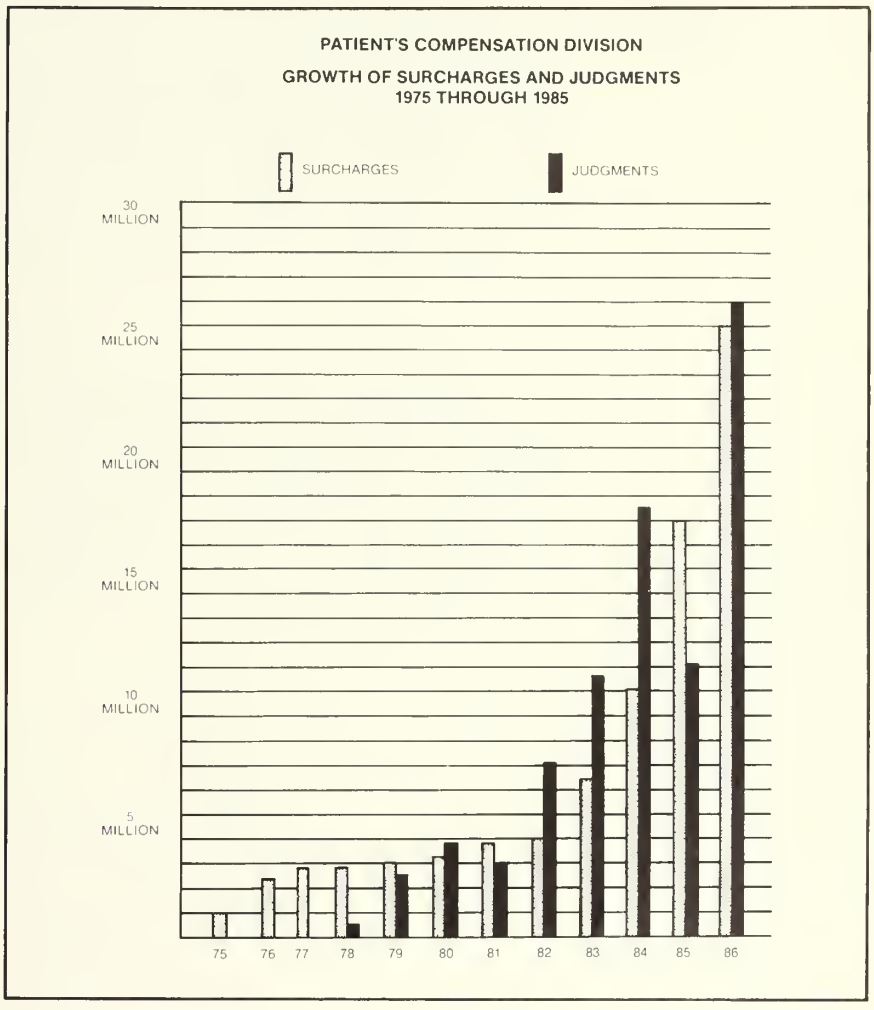
would have included high schools under the Medical Malpractice Act. The other would have required a physician's license to be permanently revoked if the physician received two or more adverse adjudicated malpractice decisions. This proposal would not have recognized whether a case was "settled out" in order to expedite the process, nor the fact that high risk specialists are subject to greater liability in their practice.

ISMA supported legislation, which was adopted, to include nursing homes and certain not-for-profit health corporations under the medical malpractice statute.

Increased Surcharges

The increasing surcharge is a recurring problem. According to an actuarial report in 1985, the escalation could have been alleviated if the surcharge had been set higher than 10% in the early years of the fund. For the record, we have seen the surcharge increase from the initial 10% to 25% as of Sept. 1, 1982. It was increased to 50% in April 1984; 75% in April 1985, and last year to 100%. The increases are due to the unfunded liability of the PCF.

Even with the continued increases, in 1986, the Fund paid out more than $26.5 million, while taking in only $25.5 million (*see graph*)



Several other changes have been made in the malpractice law since it went into effect including the provision for periodic payments from insurers and from the PCF and the provision for making payments from the PCF twice instead of once a year. Each of these was an attempt to protect the solvency of the fund.

This year in the Indiana General Assembly, at the request of the insurance commissioner, a proposal was enacted which allows the insurance commissioner to increase the rate of the surcharge up to 200%. Any increase is to be based on actuarial studies and without going through the legislative process each session.

An actuarial analysis of the adequacy of the present 100% surcharge showed that it should be increased to 127.7%; however, the report recommended instead that an increase to 125% actually be implemented. The increase was effective immediately on passage of the bill and promulgation of a regulation.

While physician members of ISMA are justly concerned about the escalation of the surcharge, most are aware of the necessity of maintaining the fiscal stability of the fund. Members of the Ad Hoc Committee on Medical Malpractice will examine how health care providers can make sure future increases are not done irrationally.

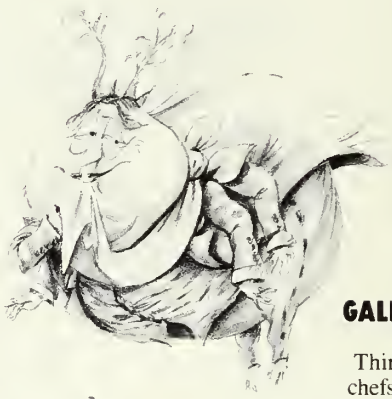
Indiana has been regarded as a leader in medical malpractice legislation. We read that doctors in other states are retiring early, refusing to perform high-risk services, or not entering high-risk specialties because of the professional liability crisis. If we are to avoid these problems, we must continue to be vigilant. We must work with our lawmakers and leaders in addressing these concerns that face the delivery of medical care.

Many consider professional liability a "pocketbook" issue, but it is an even greater quality health care issue for both physicians and patients. We must remain alert and active in order to prevent the professional liability problem from eroding the quality of medical care in Indiana.

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* ROCEPHIN is indicated in the following infections: bacterial septicemia, bone and joint, intra-abdominal, lower respiratory tract, skin and skin structure, urinary tract, bacterial meningitis and gonorrhea. Please see summary of product information on adjacent page for indicated susceptible organisms.

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Please see adjacent page for summary of product information.

Rocephin® IV·IM
ceftriaxone sodium/Roche

Before prescribing, please consult complete product information, a summary of which follows:

MICROBIOLOGY The bactericidal activity of ceftriaxone results from inhibition of cell wall synthesis. Ceftriaxone has a high degree of stability in the presence of beta lactamases, both penicillinases and cephalosporinases, of gram-negative and gram-positive bacteria. Ceftriaxone is usually active against the following microorganisms *in vitro* and in clinical infections (see Indications and Usage):

GRAM-NEGATIVE AEROBES: *Enterobacter aerogenes, Enterobacter cloacae, Escherichia coli, Haemophilus influenzae* (including ampicillin-resistant strains), *H parainfluenzae, Klebsiella* species (including *K pneumoniae*), *Neisseria gonorrhoeae* (including penicillinase and nonpenicillinase producing strains) *Neisseria meningitidis, Proteus mirabilis, Proteus vulgaris, Morganella morganii* and *Serratia marcescens*.

Note: Many strains of the above organisms that are multiply resistant to other antibiotics, e.g. penicillins, cephalosporins and aminoglycosides, are susceptible to ceftriaxone sodium.

Ceftriaxone is also active against many strains of *Pseudomonas aeruginosa*.

GRAM-POSITIVE AEROBES: *Staphylococcus aureus* (including penicillinase-producing strains) and *Staphylococcus epidermidis* (Note: methicillin resistant staphylococci are resistant to cephalosporins, including ceftriaxone), *Streptococcus pyogenes* (Group A beta hemolytic streptococci), *Streptococcus agalactiae* (Group B streptococci) and *Streptococcus pneumoniae* (Note: Most strains of enterococci, *Streptococcus faecalis* and Group D streptococci are resistant.)

Ceftriaxone also demonstrates *in vitro* activity against the following microorganisms, although the clinical significance is unknown:

GRAM-NEGATIVE AEROBES: *Citrobacter freundii, Citrobacter diversus, Providencia* species (including *Providencia rettgeri*), *Salmonella* species (including *S typhi*), *Shigella* species and *Acinetobacter calcoaceticus*.

ANAEROBES: *Bacteroides* species, *Clostridium* species (Note: most strains of *C difficile* are resistant).

SUSCEPTIBILITY TESTING: Standard susceptibility disk method. Quantitative methods that require measurement of zone diameters give the most precise estimate of antibiotic susceptibility. One such procedure (Bauer AW, Kirby WMM, Sherris JC, Turck M: Antibiotic Susceptibility Testing by a Standardized Single Disk Method, *Am J Clin Pathol* 45: 493-496, 1966, Standardized Disk Susceptibility Test, *Federal Register* 39: 19182-19184, 1974, National Committee for Clinical Laboratory Standards, Approved Standard: ASM 2, Performance Standards for Antimicrobial Disk Susceptibility Tests, July 1975.) has been recommended for use with disks to test susceptibility to ceftriaxone.

Laboratory results of the standardized single-disk susceptibility test using a 30-mcg ceftriaxone disk should be interpreted according to the following three criteria:

1. Susceptible organisms produce zones of 18 mm or greater, indicating that the tested organism is likely to respond to therapy.
2. Organisms that produce zones of 14 to 17 mm are expected to be susceptible if a high dosage (not to exceed 4 gm per day) is used or if the infection is confined to tissues and fluids (e.g., urine), in which high antibiotic levels are attained.
3. Resistant organisms produce zones of 13 mm or less, indicating that other therapy should be selected.

Organisms should be tested with the ceftriaxone disk, since ceftriaxone has been shown by *in vitro* tests to be active against certain strains found resistant to cephalosporin class disks.

Organisms having zones of less than 18 mm around the cephalothin disk are not necessarily of intermediate susceptibility or resistant to ceftriaxone.

Standardized procedures require use of control organisms. The 30-mcg ceftriaxone disk should give zone diameters between 29 and 35 mm, 22 and 28 mm and 17 and 23 mm for the reference strains *E coli* ATCC 25922, *S aureus* ATCC 25923 and *P aeruginosa* ATCC 27853, respectively.

DILUTION TECHNIQUES: Based on the pharmacokinetic profile of ceftriaxone, a bacterial isolate may be considered susceptible if the MIC value for ceftriaxone is not more than 16 mcg/ml. Organisms are considered resistant to ceftriaxone if the MIC is equal to or greater than 64 mcg/ml. Organisms having an MIC value of less than 64 mcg/ml, but greater than 16 mcg/ml, are expected to be susceptible if a high dosage (not to exceed 4 gm per day) is used or if the infection is confined to tissues and fluids (e.g., urine), in which high antibiotic levels are attained.

E coli ATCC 25922, *S aureus* ATCC 25923 and *P aeruginosa* ATCC 27853 are also the recommended reference strains for controlling ceftriaxone-dilution tests. Greater than 95% of MICs for the *E coli* strain should fall within the range of 0.016 to 0.5 mcg/ml. The range for the *S aureus* strain should be 1 to 2 mcg/ml, while for the *P aeruginosa* strain the range should be 8 to 64 mcg/ml.

INDICATIONS AND USAGE: Rocephin is indicated for the treatment of the following infections when caused by susceptible organisms:

LOWER RESPIRATORY TRACT INFECTIONS caused by *Strep pneumoniae, Streptococcus* species (excluding enterococci), *Staph aureus, H influenzae, H parainfluenzae, Klebsiella* species (including *K pneumoniae*), *E coli, E aerogenes, Proteus mirabilis* and *Serratia marcescens*.

SKIN AND SKIN STRUCTURE INFECTIONS caused by *Staph aureus, Staph epidermidis, Streptococcus* species (excluding enterococci), *E cloacae, Klebsiella* species (including *K pneumoniae*), *Proteus mirabilis* and *Pseudomonas aeruginosa*.

URINARY TRACT INFECTIONS (complicated and uncomplicated) caused by *E coli, Proteus mirabilis, Proteus vulgaris, M morganii* and *Klebsiella* species (including *K pneumoniae*).

UNCOMPLICATED GONORRHEA (cervical/urethral and rectal) caused by *Neisseria gonorrhoeae*, including both penicillinase and nonpenicillinase producing strains.

PELVIC INFLAMMATORY DISEASE caused by *N gonorrhoeae*.

BACTERIAL SEPTICEMIA caused by *Staph aureus, Strep pneumoniae, E coli, H influenzae* and *K pneumoniae*.

BONE AND JOINT INFECTIONS caused by *Staph aureus, Strep pneumoniae, Streptococcus* species (excluding enterococci), *E coli, P mirabilis, K pneumoniae* and *Enterobacter* species.

INTRA-ABDOMINAL INFECTIONS caused by *E coli* and *K pneumoniae*.

MENINGITIS caused by *H influenzae, N meningitidis* and *Strep pneumoniae*. Ceftriaxone has also been used successfully in a limited number of cases of meningitis and shunt infections caused by *Staph epidermidis* and *E coli*.

PROPHYLAXIS: The administration of a single dose of ceftriaxone preoperatively may reduce the incidence of postoperative infections in patients undergoing coronary artery bypass surgery.

Although ceftriaxone has been shown to have been as effective as cefazolin in the prevention of infection following coronary artery bypass surgery, no placebo-controlled trials have been conducted to evaluate any cephalosporin antibiotic in the prevention of infection following coronary artery bypass surgery.

SUSCEPTIBILITY TESTING: Before instituting treatment with Rocephin, appropriate specimens should be obtained for isolation of the causative organism and for determination of its susceptibility to the drug. Therapy may be instituted prior to obtaining results of susceptibility testing.

CONTRAINDICATIONS: Rocephin is contraindicated in patients with known allergy to the cephalosporin class of antibiotics.

WARNINGS: BEFORE THERAPY WITH ROCEPHIN IS INSTITUTED, CAREFUL INQUIRY SHOULD BE MADE TO DETERMINE WHETHER THE PATIENT HAS HAD PREVIOUS HYPERSENSITIVITY REACTIONS TO CEPHALOSPORINS, PENICILLINS OR OTHER DRUGS. THIS PRODUCT SHOULD BE GIVEN CAUTIOUSLY TO PENICILLIN-SENSITIVE PATIENTS. ANTIBIOTICS SHOULD BE ADMINISTERED WITH CAUTION TO ANY PATIENT WHO HAS DEMONSTRATED SOME FORM OF ALLERGY, PARTICULARLY TO DRUGS. SERIOUS ACUTE HYPERSENSITIVITY REACTIONS MAY REQUIRE THE USE OF SUBCUTANEOUS EPINEPHRINE AND OTHER EMERGENCY MEASURES.

Pseudomembranous colitis has been reported with the use of cephalosporins (and other broad-spectrum antibiotics), therefore, it is important to consider its diagnosis in patients who develop diarrhea in association with antibiotic use.

ROCEPHIN™ (ceftriaxone sodium/Roche)

Treatment with broad-spectrum antibiotics alters the normal flora of the colon and may permit overgrowth of clostridia. Studies indicate a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis. Cholestyramine and colestipol resins have been shown to bind to the toxin *in vitro*.

Mild cases of colitis respond to drug discontinuance alone. Moderate to severe cases should be managed with fluid, electrolyte and protein supplementation as indicated.

When the colitis is not relieved by drug discontinuance or when it is severe, oral vancomycin is the treatment of choice for antibiotic-associated pseudomembranous colitis produced by *C difficile*. Other causes of colitis should also be considered.

PRECAUTIONS: *GENERAL*: Although transient elevations of BUN and serum creatinine have been observed, at the recommended dosages, the nephrotoxic potential of Rocephin is similar to that of other cephalosporins.

Ceftriaxone is excreted via both biliary and renal excretion (see Clinical Pharmacology). Therefore patients with renal failure normally require no adjustment in dosage when usual doses of Rocephin are administered, but concentrations of drug in the serum should be monitored periodically if evidence of accumulation exists, dosage should be decreased accordingly.

Dosage adjustments should not be necessary in patients with hepatic dysfunction; however, in patients with both hepatic dysfunction and significant renal disease, Rocephin dosage should not exceed 2 gm daily without close monitoring of serum concentrations.

Alterations in prothrombin times have occurred rarely in patients treated with Rocephin. Patients with impaired vitamin K synthesis or low vitamin K stores (e.g., chronic hepatic disease and malnutrition) may require monitoring of prothrombin time during Rocephin treatment. Vitamin K administration (10 mg weekly) may be necessary if the prothrombin time is prolonged before or during therapy.

Prolonged use of Rocephin may result in overgrowth of nonsusceptible organisms. Careful observation of the patient is essential. If superinfection occurs during therapy, appropriate measures should be taken.

Rocephin should be prescribed with caution in individuals with a history of gastrointestinal disease, especially colitis.

CARCINOGENESIS, MUTAGENESIS, IMPAIRMENT OF FERTILITY: Carcinogenesis: Considering the maximum duration of treatment and the class of the compound, carcinogenicity studies with ceftriaxone in animals have not been performed. The maximum duration of animal toxicity studies was six months.

Mutagenesis: Genetic toxicology tests included the Ames test, a micronucleus test and a test for chromosomal aberrations in human lymphocytes cultured *in vitro* with ceftriaxone. Ceftriaxone showed no potential for mutagenic activity in these studies.

Impairment of Fertility: Ceftriaxone produced no impairment of fertility when given intravenously to rats at daily doses up to 586 mg/kg/day, approximately 20 times the recommended clinical dose of 2 gm/day.

PREGNANCY: Teratogenic Effects: Pregnancy Category B. Reproductive studies have been performed in mice and rats at doses up to 20 times the usual human dose and have no evidence of embryotoxicity, fetotoxicity or teratogenicity. In primates, no embryotoxicity or teratogenicity was demonstrated at a dose approximately three times the human dose.

There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproductive studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

Nonteratogenic Effects: In rats, in the Segment I (fertility and general reproduction) and Segment III (perinatal and postnatal) studies with intravenously administered ceftriaxone, no adverse effects were noted on various reproductive parameters during gestation and lactation, including postnatal growth, functional behavior and reproductive ability of the offspring, at doses of 586 mg/kg/day or less.

NURSING MOTHERS: Low concentrations of ceftriaxone are excreted in human milk. Caution should be exercised when Rocephin is administered to a nursing woman.

PEDIATRIC USE: Safety and effectiveness of Rocephin in neonates, infants and children have been established for the dosages described in the Dosage and Administration section.

ADVERSE REACTIONS: Rocephin is generally well tolerated. In clinical trials, the following adverse reactions, which were considered to be related to Rocephin therapy or of uncertain etiology, were observed:

LOCAL REACTIONS—pain, induration or tenderness at the site of injection (1%). Less frequently reported (less than 1%) was phlebitis after IV administration.

HYPERSENSITIVITY—rash (1.7%). Less frequently reported (less than 1%) were pruritus, fever or chills.

HEMATOLOGIC—eosinophilia (6%), thrombocytosis (5.1%) and leukopenia (2.1%). Less frequently reported (less than 1%) were anemia, neutropenia, lymphopenia, thrombocytopenia and prolongation of the prothrombin time.

GASTROINTESTINAL—diarrhea (2.7%). Less frequently reported (less than 1%) were nausea or vomiting and dysgeusia.

HEPATIC—elevations of SGOT (3.1%) or SGPT (3.3%). Less frequently reported (less than 1%) were elevations of alkaline phosphatase and bilirubin.

RENAL—elevations of the BUN (1.2%). Less frequently reported (less than 1%) were elevations of creatinine and the presence of casts in the urine.

CENTRAL NERVOUS SYSTEM—headache or dizziness were reported occasionally (less than 1%).

GENITOURINARY—moniliasis or vaginitis were reported occasionally (less than 1%).

MISCELLANEOUS—diaphoresis and flushing were reported occasionally (less than 1%).

Other rarely observed adverse reactions (less than 0.1%) include leukocytosis, lymphocytosis, monocytosis, basophilia, a decrease in the prothrombin time, jaundice, glycosuria, hematuria, bronchospasm, serum sickness, abdominal pain, colitis, flatulence, dyspepsia, palpitations and epistaxis.

DOSAGE AND ADMINISTRATION: Rocephin may be administered intravenously or intramuscularly. The usual adult daily dose is 1 to 2 gm given once a day (or in equally divided doses twice a day) depending on the type and severity of the infection. The total daily dose should not exceed 4 grams.

For the treatment of serious miscellaneous infections in children, other than meningitis, the recommended total daily dose is 50 to 75 mg/kg (not to exceed 2 grams) given in divided doses every 12 hours.

Generally, Rocephin therapy should be continued for at least two days after the signs and symptoms of infection have disappeared. The usual duration is 4 to 14 days; in complicated infections longer therapy may be required.

In the treatment of meningitis, a daily dose of 100 mg/kg (not to exceed 4 grams), given in divided doses every 12 hours, should be administered with or without a loading dose of 75 mg/kg.

For the treatment of uncomplicated gonococcal infections, a single intramuscular dose of 250 mg is recommended.

For preoperative use (surgical prophylaxis), a single dose of 1 gm administered ½ to 2 hours before surgery is recommended.

When treating infections caused by *Streptococcus pyogenes*, therapy should be continued for at least ten days.

No dosage adjustment is necessary for patients with impairment of renal or hepatic function; however, blood levels should be monitored in patients with severe renal impairment (e.g., dialysis patients) and in patients with both renal and hepatic dysfunctions.

HOW SUPPLIED: Rocephin (ceftriaxone sodium/Roche) is supplied as a sterile crystalline powder in glass vials and piggyback bottles. The following packages are available:

Vials containing 250 mg equivalent of ceftriaxone: Boxes of 10 (NDC 0004-1962-01)
Vials containing 500 mg equivalent of ceftriaxone: Boxes of 10 (NDC 0004-1963-01)
Vials containing 1 gm equivalent of ceftriaxone: Boxes of 10 (NDC 0004-1964-01)
Piggyback bottles containing 1 gm equivalent of ceftriaxone: Boxes of 10 (NDC 0004-1964-03)
Vials containing 2 gm equivalent of ceftriaxone: Boxes of 10 (NDC 0004-1965-01)
Piggyback bottles containing 2 gm equivalent of ceftriaxone: Boxes of 10 (NDC 0004-1965-03)
Bulk pharmacy containers, containing 10 gm equivalent of ceftriaxone: Boxes of 1 (NDC 0004-1971-01)

NOT FOR DIRECT ADMINISTRATION.

Roche Laboratories
Division of Hoffmann-La Roche Inc.
Nutley, New Jersey 07110



References:

1. Data on file, Hoffmann-La Roche Inc.
2. Patel IH, Kaplan SA. *Am J Med* 77:17-25, Oct 19, 1984
3. Richards DM, *et al: Drugs* 27:469-527, 1984
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5. Tanner DJ, Nazarian MQ. *Am J Med* 77:104-111, Oct 19, 1984

CME QUIZ

TO OBTAIN ONE HOUR OF CATEGORY 1 AMA CME CREDIT, answer the following questions by circling the correct answer on the answer sheet below. Complete and clip the application form and mail it to: **Indiana University School of Medicine, CME Division, BR 156, 1226 W. Michigan St., Indianapolis 46223.**

Septic Arthritis

CONTINUED FROM PAGES 521-525

1. Patients with septic arthritis:
   a) always have positive synovial fluid cultures.
   b) always have fever and chills.
   c) usually have radiographic evidence of bony destruction within the first 72 hours.
   d) have a mortality of approximately 10%.
2. Gonococcal arthritis:
   a) most commonly has a monoarticular presentation.
   b) usually has positive synovial fluid cultures.
   c) may have tenosynovitis as its predominant manifestation.
   d) has an associated diffuse macular rash.
3. The most common route by which bacteria infect a joint is:
   a) direct penetration.
   b) hematogenously.
   c) an adjacent osteomyelitis.
   d) an overlying cellulitis.
4. Surgical drainage of an infected joint is indicated:
   a) in all hip infections.
   b) when no improvement in the synovial fluid analysis occurs after 48-72 hours of parenteral antibiotics and needle aspiration.
   c) when complete evacuation of the joint by aspiration is not successful.
   d) all of the above.
5. Studies helpful in evaluating patients with possible septic arthritis include all of the following *except*:
   a) synovial fluid cell count and differential.
   b) blood cultures.
   c) synovial fluid protein.
   d) x-rays of the involved joint(s).
6. Which are predisposing for the development of septic arthritis?
   a) rheumatoid arthritis.
   b) age greater than 65 years old.
   c) alcoholism.
   d) acute leukemia.
   e) all of the above.
7. Empiric antibiotics for possible septic arthritis should be:
   a) penicillin in otherwise healthy young adults.
   b) always withheld until culture results are known.
   c) ampicillin in patients more than 50 years old.
   d) based *solely* on the age and underlying health of the patient.
8. Which synovial fluid analysis is *most* consistent with an infected joint?
   a) 45,000 white cells/mm^3; 70% PMNs; glucose 75 mg% (serum 100 mg%).
   b) 22,500 white cells/mm^3; 92% PMNs.
   c) 68,000 white cells/mm^3; 97% PMNs; glucose 45 mg% (serum 110 mg%).
   d) 5,500 white cells/mm^3; no differential.
9. Which is *not* true regarding the complications of septic arthritis?
   a) they are less likely to occur if therapy is started within 7 days of the onset of symptoms.
   b) dissemination of infection during treatment strongly suggests seeding from the joint.
   c) contractures can be prevented by the use of splints and physical therapy.
   d) a chronic sterile synovitis can result despite proper therapy.
10. Antibiotics in nongonococcal septic arthritis should be:
    a) given intra-articularly.
    b) given 2 weeks parenterally, then 1 week orally.
    c) started even without positive cultures if the presentation and synovial fluid analysis are consistent with the diagnosis.
    d) sufficient as the *only* mode of therapy.

MAY CME QUIZ Answers

Following are the answers to the CME quiz that appeared in the May 1987 issue: "Practical Oxygen Therapy," by Philip S. Gibbs, M.D.

1. c	6. c
2. b	7. c
3. b	8. a
4. c	9. b
5. a	10. b

Answer sheet for Quiz: (Septic Arthritis)

1. a b c d	6. a b c d e
2. a b c d	7. a b c d
3. a b c d	8. a b c d
4. a b c d	9. a b c d
5. a b c d	10. a b c d

I wish to apply for one hour of category 1 AMA Continuing Medical Education credit through the I.U. School of Medicine. I have read the article and answered the quiz on the answer sheet above. I understand that my answer sheet will be graded confidentially, at no cost to me, and that notification of my successful completion of the quiz (80% of the questions answered correctly) will be directed to me for my application for the Physician's Recognition Award of the American Medical Association. I also understand that if I do not answer 80% of the questions correctly I will not be advised of my score but the answers will be published in the next issue of INDIANA MEDICINE.

Name (please print or type)

Address

Identification number (found above your name on mailing label)

Signature

To be eligible for this month's quiz, send your completed, signed application before July 10, 1987 to the address appearing at the top of this page.



AUXILIARY REPORT

Anne Throop, Indianapolis
ISMA Auxiliary President 1987-88

The ISMA Auxiliary has just completed a very successful year under the leadership of its president, Alfrieda Mackel. Her theme, "Partners in Health," emphasized what all of us believe: that if we are to be successful in this busy world we must do it together. The annual House of Delegates was held at the Marriott Hotel in Fort Wayne, Indiana. Auxilian delegates from Indiana counties gathered to share ideas, learn from others and begin another year under our new president, Anne Throop.

We were honored to welcome as our guest AMA Auxiliary President-Elect Betty Szewczyk, who reminded us that another AMA Auxiliary year is ending, and, as we were gathering in Fort Wayne, auxilians from around the country are preparing to meet at the Drake Hotel in Chicago for the annual convention of the AMA Auxiliary June 21-24, 1987.

The annual meeting held in Chicago is of the utmost importance because the decisions made by the delegates affect and influence each organized county in Indiana. The idea of a federated structure is vital to the Auxiliary. By joining all three levels of the Auxiliary, its members not only contribute to the whole, but they receive all the benefits of the knowledge of the collected membership. The federation serves as a network for activities at all levels, providing services which include program coordination, education and production of publications, all made possible through the annual dues paid by each auxilian.

Highlights of the upcoming June meeting in Chicago include discussion on health projects, legislation, membership and AMA-ERF. Delegates will meet to discuss all the ways the Auxiliary can help and support the AMA. The agenda for the four-day meeting is packed with inspiration, energy and enthusiasm. The presentation of awards, state caucuses, elections and special speakers will include the closing address by William S. Hotchkiss, M.D., AMA president.

Our Indiana delegates this year will be Alfrieda Mackel (as leader of the delegation), Anne Throop, Ann Wrenn, Lura Stone, Rod Ashley, Sue Greenlee, Ruth Gattman, Suzanne Miller, and Sylvia Scheeringa. The alternate delegates will be Vivian Priddy and Dorothy Bickers.

In addition to the annual meeting in June, there will be two Leadership Training Workshops offered during this coming year for county presidents-elect to attend. Indiana may send seven delegates to each of these Confluences. From personal experience, I can tell you that the knowledge gained from the leadership training sessions is invaluable. It teaches the physician's spouse how to be a better leader within the community, how to be a more effective member of the auxiliary, and how to serve the AMA with knowledge, energy and caring.

Participating in the AMA Auxiliary is a stimulating, exciting, and rewarding experience. I highly recommend membership to every physician's spouse. Membership in the national, state and county medical auxiliary provides intelligent answers and actions. Today, more than ever before, it is extremely important to keep abreast of local, state and national issues affecting the practice of medicine. We look forward to an exciting new year.—Ann Wrenn, ISMA-A President-Elect.

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BOOK REVIEWS

EMOTIONS AND YOUR HEALTH, by Emrika Padus, editor of Prevention Magazine. Copyright 1986, Rodale Books, Emaus, Pa. 18048. 732 pages, $24.95. *(Reviewed by Arthur G. Blazey, M.D., Santa Claus, Ind.)*

Ms. Emrika Padus was assisted in compiling this book by other editors of Prevention Magazine and by conferences with Patricia Garfield, Steven Halpern, and Dennis Jaffe, all PhDs, and with Gerald Jampolsky, Emmett Miller, Naomi Remen, Bernard Seegel and George Solomon, all M.D.s. The comments of other doctors and health professionals are mentioned throughout the book.

The book is divided into 13 sections that contain 75 subtopics that start with A Well Nourished Mind and end with A Soothing Touch. Readers are told that a well nourished mind is a stronghold against depression, fatigue and irritability. Nourishment could be a good opera, a good book, or worthwhile studies along with sufficient vitamins and minerals. Some people can get increased libido with Folic Acid, and Magnesium has helped some people under stress.

The author claims that diets of high fiber, minerals and vitamins will prevent reactive hypoglycemia, and that L-Dopa with tyrosine will stop daytime sleepiness. In part four, she claims that boredom is the result of evolution. In part five she says that stress is minimized by Transcendental Meditation. The technique of that process, according to Dr. Herbert Benson of New York, is: Sitting in a quiet room on the floor in a relaxed posture with eyes closed, one repeats any simple word (called a mantra) over and over while thinking about any expectation. This is done for 20 minutes before breakfast and supper daily. Dr. Benson charges $400 to teach it properly. It is an excellent tranquilizer—the meditation, not the fee! Massage is another modality that diminishes stress. Body stroking should be away from the heart. Foot massage is also useful. A vacation would help.

If you have trouble sleeping—read a book. Soft addiction is discussed in the eighth section—those are the smaller addictions such as eating an excess of sweets, smoking or excess coffee drinking. You can beat them by better motivation and persistence in avoiding their dangers. The author suggests dreams and biorthyms to increase your self awareness. Improve yourself in all ways by problem solving, precise diction, weight loss and the exhilaration of risk taking.

One should know the background of the above ideas that appear in this book. Robert Rodale first started publishing a magazine that promoted the use of organic fertilizers many years ago. He then started the Prevention Magazine. About five years ago, while still editor of that magazine, he had a dream that caused him to suggest the formation of a national organization which he called The People's Medical Society for the purpose of cutting medical costs and helping people to learn how to take care of themselves. It's evident that medical costs have continued to increase, despite the fact that more lay persons are conducting the management of many medical affairs. Others have not taken the trouble to obtain information on better health care that has always been available in the public libraries.

In Prevention of July 1982, under the heading, The Medical Power of People, Rodale tells us, "Something is going to happen. The medical system can't keep growing as it has in the past, nor can it be as resistant to change. A crunch of some kind will come, and there will probably be rationing of medical care."

While Rodale did not establish his dream about a People's Medical Society, it may have been used by a more powerful group of lobbyists and activists to develop and run the American Association of Retired People. That organization is now asking Congress to pass the catastrophic medical insurance bill of the Department of Health and Human Services. Our federal government is already in bankrupting debt that could only be increased by such a plan that is now being offered to patients by private insurance companies. Physicians should tell their patients to advise their representatives to kill such an asinine plan.



"If you'd like a second opinion, I can refer you to another financial planner."

GENERAL OPHTHALMOLOGY, 11th edition, by Daniel Vaughn and Taylor Asbury. Copyright 1986, Appleton-Century-Crofts, East Norwalk, Conn. 396 pages, softcover, $22. *(Reviewed by Thomas J. Conway, M.D., Terre Haute)*

General Ophthalmology, a very good book, is chock-full of ophthalmologic information and advice.

Drs. Vaughn and Asbury are Clinical Professors of Ophthalmology at the Universities of San Francisco and Cincinnati, respectively. They are joined by 13 other authors, and they keep the subject format and writing style consistent and good. Everything from Embryology to Pharmacology is treated seriously and well. The drawings and photographs—all black-and-white—are very helpful. (Although this edition's copyright is by Appleton-Century-Crofts, previous copyrights of *General Ophthalmology*—since 1958—had been by Lange Medical Publications.)

A comprehensive review of ophthalmologic problems is presented. The authors define and describe those problems, then offer detailed methods of medical management when appropriate. Surgical therapy is describ-

ed briefly; details are left to surgical tomes. This editorial thrust allows a concentration of data invaluable to the non-ophthalmologist. Emphasis is placed on pitfalls in diagnosis and therapy; for example, the indiscriminate use of topical ophthalmic steroid medications is repeatedly decried.

Repetition of subject matter divided in separate chapters of the book can cause reader confusion, since directing reference to the separate section is often absent and pertinent information may be missed. Items of interest should be sought in the index where multiple listings are available.

Chapters are not equally up to date. For example, the CT scan is never mentioned in descriptions of central nervous system disorders like subdural hematoma and subarachnoid hemorrhage on page 254, while photos of orbital and cerebral CT scans are used effectively earlier in the chapter.

There are few typographical errors, but on page 375 the word inhibitor is omitted, leaving carbonic anhydrase as a treatment for glaucoma. Aqueous and vitreous are used as nouns in the text—an acceptable practice today, I suppose.

General Ophthalmology is a worthwhile addition to the library of any practitioner called upon to examine or treat the human eye.

ANATOMY: A REGIONAL ATLAS OF THE HUMAN BODY, 3rd edition, edited by Carmine D. Clemente, Ph.D. Copyright 1987, Urban & Schwarzenberg, Baltimore, Md. 439 pages, hardcover, $42.50. *(Reviewed by W. D. Snively, Jr., M.D., Evansville)*

Anatomy presents a regional atlas of the human body. It represents the third edition of a text designed to facilitate the learning of anatomy by students in the medical, dental, physical therapy, nursing, and other health professions. This edition expands the coverage of certain regions of the body, notably the thorax, abdomen, pelvis, extremities, neck, and head.

Figures in this edition, as in the two previous editions, were derived chiefly from the Johannes Sobotta and the Eduard Pernkopf collections. Over 225 of the figures represent precise repaintings of older illustrations from former editions. A number of black-and-white figures are now presented in full color, brighter and more vivid than previously. The color plates are brilliant. Numerous radiographs are incorporated in the text; they are clear and of obvious quality.

Many black-and-white drawings and diagrams round out the text. Taken as a whole, this is the best single-volume atlas your reviewer has had the pleasure of examining. Coming from the illustrious Urban & Schwarzenberg of Baltimore/Munich, printed in Germany, this should not be cause for surprise. The index is unusually complete. The hard cover atlas is attractively bound, with appealing end-papers.

While this atlas, with its 800 illustrations, is particularly designed for students in medicine and the allied sciences, it can be heartily recommended for all physicians as a reference book and as an attractive review of anatomy.

DIETITIANS' FOOD FAVORITES, recipes from members of the American Dietetic Association Foundation, assisted by Restaurants and Institutions editorial staff. Copyright 1985, Cahners Publishing Co., Des Plaines, Ill. 360 pages, hardcover, $25. *(Reviewed by Robert G. Ziss, M.D., Evansville)*

Unique in its planning and format, distinguished by the professional background of its authors, and enticing in the delectability and variety of its contents, this is no run-of-the-mill cookbook.

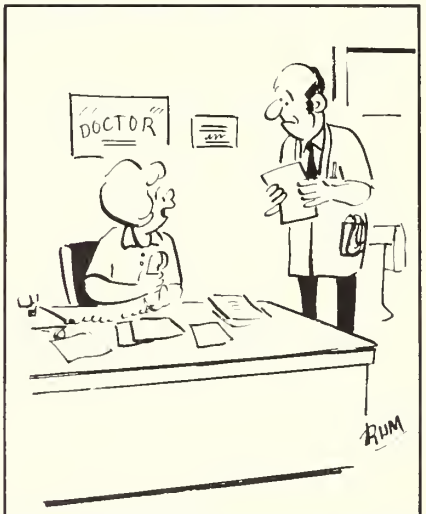
Its recipes are presented by trained dietitians and nutritionists, all members of the American Dietetic Association, selected not only on sound nutritional principles, but also on the basis of taste and sight appeal. All have been tested, used, and enjoyed; some are original and others have been collected from old, tried-and-true sources. Every one of them appears to be delicious—as well as healthy—so that the reader feels the temptation and desire to try them all.

The first chapter explains dietary principles succinctly: food selection, recommended dietary allowances, and dietary guidelines. It discusses the specifics of carbohydrates, fiber, fat, cholesterol, and sodium relating to modern nutrition.

Chapter two tells how the book may be utilized practically by adapting the recipe contents to meet individual needs—how to modify ingredients to lower sodium or cholesterol, how to increase or lower calories, and how to economize when expensive or hard-to-find materials are called for.

A third section presents hints on visual appeal—how to present foods with artistry to enhance their appeal.

The bulk of the book consists of one wonderful recipe after another, each with a nutrient analysis (breakdown of food types, calories, vitamins and minerals). They run the gamut of appetizers, soups, salads, meat, poultry, seafoods, vegetable and dessert dishes. Everything and more is here from such exotics as plum clafouti, spicy apple yogosicles, and supreme de volaille farci (baked chicken breasts) to such mundane sounding, but still deliciously superb, dishes as homestead pork chops, creamy lo-cal potatoes, and Mother's pound cake.



"Mrs. Brummer forgot what foods she shouldn't eat—so she tried EENIE—MEENIE—MINY—MOE..."

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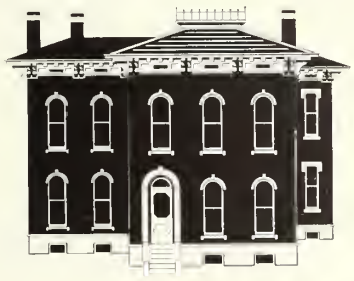
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The *Physicians' Directory* is the most ethical and professional method of announcing specialty practice. It is also the most effective medium for listing office location, office hours, and telephone number for the convenience of colleagues in referring patients.

The title of diplomate of a specialty examining board, a requirement for admission to the *Directory*, offers its assurance of qualifications, whether listed or not.

Family physicians may announce office schedules that are reciprocally staggered in order to provide access to evening and weekend and holiday medical service.

In addition to providing benefits to physicians, the *Directory* is a practical means of providing financial support for INDIANA MEDICINE.

All diplomates of the ISMA are invited to enter a professional card in the *Directory*.

This space contributed as a public service.

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Three, after two initial negative tests one year apart, get a procto exam every three to five years if you are over 50.

These guidelines are the best protection against colorectal cancer you can have.

If you're not over 50, please give this information to friends and loved ones who are.

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Get a checkup. Life is worth it.

NEWS NOTES

ISMA Membership Grows by 23.7% in 10 Years

The Indiana State Medical Association has 1,583 more members today than it did 10 years ago, according to Rosanna Iler, coordinator of ISMA's Membership Services.

Year-end figures for 1986 showed that 6,684 physicians were members of the Association, an increase of 23.7% in the past decade. In 1977, only 5,101 physicians were members.

Of the Association's 13 medical districts, the Seventh District, which includes Marion, Hendricks, Johnson and Morgan Counties, showed the largest increase in membership. The District membership jumped 16.2% since 1982, when it had 1,469 members; today it has 1,752 members.

The second highest membership increase was achieved by the Third District, which includes Clark, Floyd, Harrison-Crawford, Lawrence, Orange, Scott and Washington Counties. The District membership climbed by 14.3% since 1982, when it had 209 members; today it counts 244 members.

In third place is the Eighth District, which includes Delaware-Blackford, Jay, Madison and Randolph Counties. In the past five years, the District membership grew by 11.9%, climbing from a membership of 303 to today's 344.

Other Districts with significant increases are the Thirteenth District (11%), the Second District (9.5%), the Twelfth District (8.5%), and the Ninth District (8%).

Although their percentages were not quite as high, all other District Medical Societies also enjoyed increases in membership from 1982 through 1986.

Boards Launch Joint Effort to Improve Care of Elderly

The American Board of Family Practice and the American Board of Internal Medicine have jointly formed a single high standard for the certification of their Diplomates in Geriatric Medicine.

Competence in Geriatric Medicine will be recognized by a Certificate of Added Qualifications, which will be awarded to candidates who satisfactorily meet post-residency training requirements and pass an objective examination in Geriatric Medicine.

Diplomates of both Boards will have to revalidate the certificate within seven years by means of a recertification process to be developed.

Poll Shows Most Consumers Accept Hospital Advertising

Banks and hospitals received a nod of approval from a majority of adult Americans to advertise their services, according to a March 1987 SRI Gallup telephone poll of 1,000 Americans nationwide. When asked, "Do you think the following professionals should advertise their services?" 84% gave their OK to banks, 62% to hospitals, 59% to lawyers and 52% to physicians.

Younger, higher-income, and white collar adults tend to support bank, hospital and physician advertising. However, blue collar, lower-income, but yet still younger consumers support legal advertising.

"With service advertising, familiarity breeds assent," says Steven R. Steiber, senior vice-president of SRI Gallup. "Banks have been advertising for a long time now, but hospital, legal and physician advertisements are new on the block. Whether consumers like it or not, the extremely strong competition among services will necessitate more and more service advertising. Fortunately for these professionals, a majority of consumers accept that fact."

A majority of Americans say it's OK for these services to advertise, but do consumers like what they've seen? When asked to evaluate these services' advertisements, both banks and hospitals received high marks, getting a 79% and 58% favorable rating, respectively. But lawyers' and physicians' ads were not as highly regarded (44% and 41% favorable ratings, respectively).

WISE vs. SHREWD

Commentary

"Wise" implies love or knowledge of the good. "Shrewd" implies love or knowledge of evil.

The shrew is a tiny, vicious, mouse-like animal that must eat a huge amount of food each day, because of the ratio of its surface area to its volume. It will attack almost any creature in its quest for food.

It has been said of Lincoln that he was a shrewd judge of character. With his experience as a lawyer and other gifts, Lincoln could judge men's motives well.

But an example of a shrewd man was Rameses, the Pharoah. In Exodus, Chapter 1, (Revised Standard Version), the Pharoah says, "Come, let us deal shrewdly with them. Lest they multiply ... Therefore they set taskmasters over them to afflict them with heavy burdens;"

"Cunning," like a cunning fox, is close to "shrewd," and it helps us to understand "shrewd."

I don't think it is a compliment to call someone a shrewd man.—Richard J. Noveroske, M.D., Newburgh



"The doctor not only fired me, he's also firing you for talking him into hiring me."

For the Asking . . .

• "You Don't Have to Molest That Child" is a new pamphlet written for offenders. It challenges them to admit they have a serious problem and to seek help. The pamphlet is published by the National Committee for Prevention of Child Abuse, 332 S. Michigan Ave., Suite 950, Chicago 60604—(312) 663-3520.

• The effects of unrelieved stress on physicians, residents and medical students are discussed in four instructional videotapes being offered by the American Academy of Family Physicians. The four tapes, which feature actors portraying stressful medical and home life situations, are: Stress and the Resident; Stress and the Medical Student; Stress and the Practicing Physician; and Stress and the Medical Relationship: A View of the Spouse. The tapes sell for $50 each. Write the AAFP Committee on Mental Health, 1740 W. 92nd St., Kansas City, Mo. 64114, or call toll-free 1-800-821-2512.

• "The Menopause Time of Life," a publication of the National Institute on Aging, has been updated to answer common questions asked about menopause. It is intended for women of all ages and may be helpful to family members, health care providers and the press. For a free copy contact the NIA Information Center/Meno, 2209 Distribution Circle, Silver Spring, Md. 20910—(301) 495-3455.

• How physicians can help patients stop smoking is the subject of a new booklet available through local chapters of the American Lung Association. It's called "Clinical Opportunities for Smoking Intervention: A Guide for the Busy Physician."

• The contract evaluation service developed by the California Medical Association is now available to individual physicians and medical organizations outside California. CMA's contract evaluations are designed to help physicians and medical groups understand the obligations imposed by HMO, PPO and other contracts, especially the professional liability and financial implications, before signing them. The objective analyses are drafted to draw attention to paragraphs of the agreement that warrant further inquiry or clarification or that present significant issues. For more information, contact Elizabeth Snelson, Esq., CMA, P.O. Box 7690, San Francisco 94120—(415) 863-5522.

• Hoosiers for Safety Belts, Inc., a non-profit organization that encourages compliance with the safety belt law going into effect July 1, has several safety belt pamphlets available that are appropriate for distribution to patients and as waiting room literature. For samples, contact Hoosiers for Safety Belts, One N. Capitol, Suite 1240, Indianapolis 46204—(317) 631-1510.

HealthPlus HMO Expands Its Provider Network

HealthPlus HMO, Inc., a health maintenance organization based in Indianapolis and licensed to operate throughout Indiana, has expanded its network of providers to a total of 22 hospitals.

An HMO delivers health care services to voluntarily enrolled members in a specific geographic area at a predetermined fee. HealthPlus allows members to use the services of their selected physician in his or her private office—not in a clinic or health care facility.

The newly added hospitals, Westview Hospital in Indianapolis and St. Anthony Hospital in Crown Point, have become providers in the state's central and northwest regions, respectively.

Physician Recognition Awards

The following ISMA physicians are recent recipients of the AMA's Physician Recognition Award. This award is official documentation of Continuing Medical Education hours earned, and is acceptable proof in most states requiring CME in re-registration that the mandatory hours of CME have been accomplished.

Agana, Adriano A., Gary
Ball, Margaret J., Fort Wayne
Bernard, Marvin R., Merrillville
Bobb, Kenneth E., Seymour
Booze, James H., Bloomington
Bretz, Robert D., Huntington
Clausen, Robert W., South Bend
Davidson, Robert J., Evansville
Drake, James R., Anderson
Haines, David W., Warsaw
Jani, Natwerlal S., Indianapolis
Johns, Janet S., Lafayette
Jones, Larry G., Bluffton
Kaye, Robert C., Rensselaer
Lawton, Dennis F., Muncie
Luxenberg, Edwin R., Logansport
McClary, Charles W., Bloomington
Minick, Linus J., Churubusco
Moran, Thomas E., Indianapolis
Nuval, Augusto J., Terre Haute
Painchaud, Lionel A., Muncie
Peterson, John C., Muncie
Sadove, Alan M., Indianapolis
Salvo, Atee S., Williamsport
Sentany, Marki S., Indianapolis
Shideler, Stephen J., Carmel
Strate, Bonnie R., Indianapolis
Voskuhl, William L., Charlestown
Weinberg, Howard J., Munster
Welk, Gordon D., Rossville

NEWS NOTES

Here and There ...

Dr. Robert L. Greenlee, a Fort Wayne psychiatrist 32 years, has retired from practice; he had been medical director of the Park Center mental health facility.

Dr. Alfred C. Cox is the new president of the medical staff, Memorial Hospital of South Bend; Dr. James L. Grainger is vice-president, and Dr. Larry Thompson is secretary-treasurer.

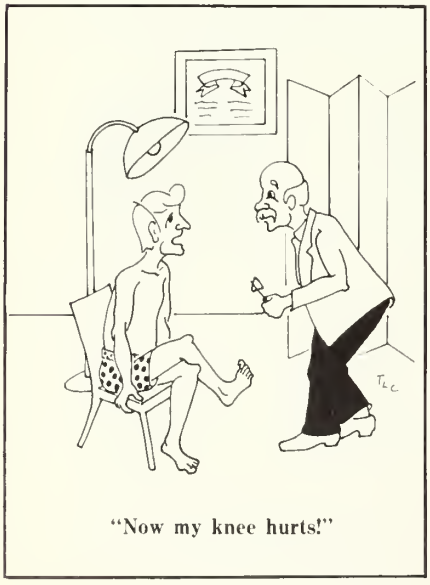
Dr. Phillip E. Hodonos and Dr. Timothy J. Kelly of Indianapolis have been certified by the American Medical Society on Alcoholism and Other Drug Dependencies as experts in treating chemical dependency.

Dr. Roland M. Kohr of Terre Haute has been elected to fellowship by the College of American Pathologists.

Dr. Eugene G. Roach of Beech Grove has been appointed medical director for mental health and chemical dependency at the Anderson Center of St. John's.

Dr. William E. Weber is the new chief of the medical staff at Bloomington Hospital; Dr. Walter L. Owens is chief of staff-elect, Dr. David K. Johnloz is secretary, and Dr. William D. Cutshall is treasurer.

The Indiana Dept. of Mental Health announces Joint Commission accreditation of all seven Indiana mental illness hospitals.



"Now my knee hurts!"

Dr. Helen L. Morrison, medical director of the pediatric psychiatry center, Kingwood Hospital, discussed children's fears about nuclear destruction at an April meeting in Michigan City.

Dr. Edward L. Davis and Dr. Jack G. Weinbaum of Terre Haute participated in a panel discussion during an April osteoporosis workshop at Union Hospital.

The late Dr. Hedwig S. Kuhn, a Hammond ophthalmologist who died in 1973, has been honored posthumously as a recipient of the Hammond Achievement Award; she was credited with "outstanding achievement nationally in the field of industrial eye medicine."

Dennis R. Jones, Indiana Mental Health Commissioner, has been appointed by Dr. Otis Bowen to the National Advisory Mental Health Council of the Alcohol, Drug Abuse and Mental Health Administration; the Council is charged with reviewing all proposals for research grants and making recommendations for funding to the Secretary of Health and Human Services.

Dr. Philip N. Eskew of Carmel discussed "Menopause and Estrogen Replacement Therapy" at an April Speaking of Health program at Bloomington Hospital.

Dr. Roger A. Hurwitz, an Indianapolis pediatric cardiologist, has been elected chairman of the Section of Cardiology, American Academy of Pediatrics; he will serve a two-year term.

Dr. J. Thomas Benson of Indianapolis has been elected chairman of the Education Committee, American Uro-Gynecology Society; as such he will serve as editor of the AUGS Quarterly Report, a scientific publication.

Study Finds That Pilots Remain Impaired 14 Hours After Being Intoxicated

The ability of Navy pilots to perform complex tasks was seriously impaired 14 hours after they became intoxicated, even though no alcohol remained in their systems, according to a recent Stanford University study.

The Standford researchers suggest that these results may have implications for others who must perform complex or dangerous tasks, such as operating heavy machinery or freight and commercial railway trains.

Nearly half of the private pilots interviewed felt it was safe to fly only four hours after drinking some alcohol. Federal Aviation Administration guidelines require that eight hours elapse between "the bottle and the throttle," while some military and commercial carriers require a 12- and 24-hour minimum, respectively.

The authors point out that these regulations are based on very limited research and that there is no rationale for the wide variation between regulations for private and military or commercial pilots.

The National Transportation Safety Board reported that, from 1975 to 1981, more than 10% of general aircraft crashes involved pilots whose blood tested positive for alcohol. (There has not been a crash in which a major U.S. commercial airline pilot had a positive blood test for alcohol since 1964.)

News from the USP

According to The United States Pharmacopeial Convention, Rockville, Md., 48 new USP-NF monographs have been adopted and will be published in the Fifth Supplement to the USP XXI-NF XVI. Forty-two of the monographs are for drugs in the USP XXI and six are from NF XVI.

The USP also announced that it has changed the wording of "General Notice on Labeling" to provide that, when the Amount of Ingredient per Dosage Unit is expressed by a whole number, it will hereafter appear without a decimal point and without a zero after the decimal point. Instead of printing 4.0 mg, which is open to an interpretation of 40 mg, the new style will be 4 mg.

New ISMA Members

Maribel G. Barrido, M.D., Marion, internal medicine.

Dolores Burant, M.D., Elkhart, family practice.

Jose V. Calub, M.D., Knox, family practice.

Timothy M. Carmody, M.D., Merrillville, ophthalmology.

Patrick K.C. Chun, M.D., Terre Haute, cardiovascular diseases.

Craig S. Ciecura, M.D., Indianapolis, family practice.

Patrick W. Connerly, M.D., Fort Wayne, family practice.

Kalpana H. Dishi, M.D., East Chicago, anesthesiology.

Edgar L. Engel Jr., M.D., Evansville, obstetrics and gynecology.

Lamar R. Ford, M.D., Indianapolis, internal medicine.

Arthur P. Greenberg, M.D., Marion, pathology.

Diane Weisman Healey, M.D., Indianapolis, geriatrics.

James E. Meacham, M.D., Indianapolis, diabetes.

Sandhya R. Nanda, M.D., Huntingburg, anesthesiology.

John M. Rathbun, M.D., Fort Wayne, psychiatry.

Paul D. Riley, M.D., Indianapolis, psychiatry.

Michael P. Ruggiero, M.D., Joliet, Ill., emergency medicine.

Richard W. Schmitt, M.D., Oak Lawn, Ill., emergency medicine.

Kenneth A. Shaver, M.D., Anderson, family practice.

William B. Skaggs, M.D., Evansville, obstetrics and gynecology.

Gregory M. Somerville, M.D., Fort Wayne, anesthesiology.

Charles D. VanMeter, M.D., Jasper, orthopedic surgery.

Lionell D. Wells, M.D., Evansville, clinical pathology.

William L. Zink, M.D., Madison, otorhinolaryngology.

Residents:

Erhard J. Bell, M.D., Greenwood, family practice.

Louis Coulis, M.D., Muncie, internal medicine.

Patrick J. Healey, M.D., Indianapolis, geriatrics.

Mark A. Henry, M.D., Indianapolis, ophthalmology.

Scot D. Hines, M.D., Indianapolis, neurology.

Edwin E. Kasha, M.D., Indianapolis, dermatology.

Thomas W. Miller, M.D., Noblesville, internal medicine.

Kirby K. Pope, M.D., Zionsville, psychiatry.

Carlos M. Portocarrero, M.D., Indianapolis, plastic surgery.

Paul H. Rexroth, M.D., South Bend, family practice.

Robert L. Rusche, M.D., Evansville, internal medicine.

Dale E. Theobald, M.D., Indianapolis, psychiatry.

Michael P. Volpe, M.D., Muncie, family practice.

Mark A. Wyant, M.D., Indianapolis, family practice.

Clinical Trials Show TPN Isn't for Everyone

A report from the American College of Physicians (ACP) advises that total parenteral nutrition (TPN) should be used only for certain groups of patients.

Analysis of 18 clinical trials did not detect reductions in major complications or death due to use of TPN. ACP recommends TPN for severely malnourished patients having major surgery such as intra-abdominal or noncardiac intrathoracic surgery.

From the Pages of JAMA . . .

Smoking, Alzheimer's disease, Reye's syndrome and high blood pressure were all covered in recent issues of the *Journal of the American Medical Association.* Briefly, it was reported that:

• As many as 56% of all smokers say they have never been advised by a physician to quit smoking. This is based on two random statewide surveys of 5,875 Michigan adults, conducted in 1980 and 1983.

• An atypical virus may be the cause of both Alzheimer's disease (AD) and Down's syndrome (DS). The presence of the infective agent in germ cells or in the fertilized zygote might result in nondisjunction in chromesome 21—while the persistence of the infective agent eventually may lead to AD in long-time survivors. Research, now in progress, is focused on chromosome 21 for a possible marker for AD.

• A new multicenter study provides firm evidence of the link between Reye's syndrome and the use of aspirin for treating chickenpox, respiratory or gastrointestinal illnesses. The study showed that more than 90% of the children with Reye's syndrome had been exposed to salicylates during a recent illness.

• Some patients with moderately high blood pressure may be able to forego medication if they manage to lose weight and reduce their intake of sodium and alcohol. This proved to be a relatively small group (39% of those on the above management for four years attained normal blood pressure). Another group, which discontinued drug therapy without nutritional changes, contained only 5% normotensive results.

Awards Reminder

July 1 is ISMA's deadline for receipt from county medical societies of Physician Community Service Award applications. Annual Journalism Award entries must be received by ISMA not later than July 15.

All entries must be submitted through county societies for approval before being submitted to ISMA.

Winners will be announced at the ISMA annual convention, which will be conducted Nov. 5-8 at the Radisson Plaza Hotel in Indianapolis.

Send your news items and comments to the Editor, INDIANA MEDICINE, 3935 N. Meridian St., Indianapolis 46208.

Look-Alike and Sound-Alike Drug Names

BENJAMIN TEPLITSKY, R. PH.
Brooklyn, N.Y.

Look-alike and sound-alike drug names can be misinterpreted by a nurse reading doctors' orders or by a pharmacist compounding physicians' prescriptions. Such misunderstandings can result in the administration of a drug not intended by the prescriber. Awareness of such look-alike and sound-alike drug names can reduce potential errors.

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Category:	Acne therapy	Chelating agent
Brand Name:	Retin-A, Ortho	Cuprid, MSD
Generic Name:	Tretinoin	Trientine HC1
Dosage Forms:	Cream, Gel, Solution	Capsules

	NALOXONE	NALTREXONE
Category:	Narcotic antagonist	Narcotic antagonist
Brand Name:	Narcan, DuPont Pharm.	Trexan, DuPont Pharm.
Generic Name:	Naloxone HC1	Naltrexone HC1
Dosage Forms:	Injection, Neonatal Inj.	Tablets

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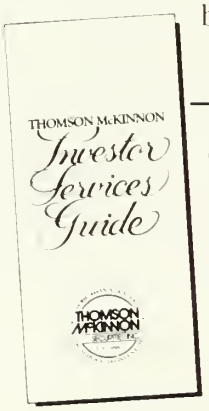
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A foundation for charitable, educational, and scientific purposes, organized by the ISMA as an endowment fund to support the educational mission of the Association and INDIANA MEDICINE.

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The Foundation is managed by a board of directors that comprises the members of the ISMA Executive Committee. At present, proceeds from the Foundation investments are awarded to INDIANA MEDICINE to further the continuing medical education program.

Memorial contributions made to the Foundation in lieu of flowers will be acknowledged by the secretary in a letter to the family of the deceased.

"for religious, charitable, scientific, literary or educational purposes"

OBITUARIES

L. Edward Gaul, M.D.

Dr. Gaul, 83, a retired former Evansville dermatologist, died March 19 in Princeton, Ky.

He was a 1930 graduate of the University of Michigan Medical School. He retired from practice two years ago.

Dr. Gaul was a past president of the Vanderburgh County Medical Society and was a member of the ISMA Fifty Year Club. He was certified by the American Board of Dermatology. He was the author of numerous scientific articles and had held a teaching position for nurses at Welborn Baptist Hospital.

Kenneth L. Culbertson, M.D.

Dr. Culbertson, 42, a South Bend pediatrician, died April 13 at St. Joseph's Medical Center, South Bend.

He was a 1970 graduate of Indiana University School of Medicine and was an Army veteran.

Dr. Culbertson had practiced in South Bend since 1975. He was an avid athlete and was active in developing the AAU track program in South Bend. He also was the chief organizer for the St. Joseph Valley Cross Country Club. Dr. Culbertson, who served his residency at Riley Children's Hospital in Indianapolis, was a member of the American Academy of Pediatrics and a diplomate of the American Board of Pediatrics.

Rodger D. Saylors, M.D.

Dr. Saylors, 61, a Michigan City physician, died April 13 at Memorial Hospital of Michigan City.

He was a 1954 graduate of the University of Cincinnati College of Medicine and was a World War II veteran.

Dr. Saylors, who had practiced in Fort Wayne from 1955 to 1963, served as a physician for the Indiana State Prison at Michigan City from 1974 to 1978. He began his private practice in Michigan City in 1979.

Gordon C. Cook, M.D.

Dr. Cook, 71, a retired South Bend physician, died April 12 at St. Joseph's Medical Center.

He was a 1940 graduate of the University of Kansas School of Medicine and was a Navy veteran of World War II.

Dr. Cook, who retired last year, had practiced obstetrics and gynecology in South Bend since 1946. He was a past president of the St. Joseph County Medical Society and a former chairman of the OB/GYN department at Memorial Hospital in South Bend. He also had served as medical director of Planned Parenthood of North Central Indiana. He was board-certified and was a fellow of the American College of Obstetrics and Gynecology.

John W. Funk, M.D.

Dr. Funk, 72, a retired former Muncie physician, died March 15 in Banning, Calif.

He was a 1943 graduate of Indiana University School of Medicine.

Dr. Funk was city health officer in Muncie in the late 1940s. He later moved to California and practiced there until he retired in 1970.

Bernard Lourie, M.D.

Dr. Lourie, 50, an internist and infectious diseases specialist at Evansville's Welborn Clinic 11 years, died April 18.

He was a 1962 graduate of the New York Medical College.

Dr. Lourie had served in the Public Health Service and was involved in the Smallpox Eradication Program in Central Africa. He taught at the Medical University of South Carolina before moving to Evansville. He was a diplomate of the American Board of Internal Medicine and a fellow of the American College of Physicians.

Stanley M. Casey, M.D.

Dr. Casey, 91, a retired Huntington general surgeon, died April 29 at a Huntington nursing home.

He was a 1921 graduate of Indiana University School of Medicine and was an Army veteran of World War I.

Dr. Casey, a former secretary of the Huntington County Medical Society, retired from practice in 1966. He had been active in the Huntington County Board of Health, the Red Cross, and the Heart Society. He had been a member of the ISMA Fifty Year Club since 1971.

Memorials: Indiana Medical Foundation

The Indiana Medical Foundation, Inc. was formed by the Indiana State Medical Association "for religious, charitable, scientific, literary or educational purposes." It provides financial assistance to support the educational mission of INDIANA MEDICINE.

Contributions made to the Foundation are deductible by donors in accordance with the Internal Revenue Code. Gifts are deductible for Federal estate and gift tax purposes.

The Foundation is pleased to acknowledge the receipt of gifts in remembrance of the following individuals:

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EXCELLENT OPPORTUNITY—Family Physician or Internist needed as a medical associate in a family practice office near St. Vincent Hospital. No investment necessary. Newly furnished 1200 square feet floor space. New ownership arrangements available if desired. Contact: Victor J. Vollrath, M.D., 7980 N. Pennsylvania St., Indianapolis, Ind. 46240—(317) 251-8800.

PEDIATRICS: Southeastern Wisconsin. Large multi-specialty group located near Milwaukee is seeking a fourth BE/BC pediatrician. Competitive salary, excellent fringe benefits. Address inquiries and CV to Administrator, P.O. Box 427, Menomonee Falls, Wisconsin 53051.

INTERNIST: BC/BE to join solo practitioner with primary care, consultative, intensive care practice-Indianapolis metropolis. Will help set up practice and/or business partnership. Position available immediately. Reply Box 36273, Indianapolis, IN 46236.

EMERGENCY MEDICINE POSITION AVAILABLE: Excellent opportunity for experienced emergency physician to join career emergency group practicing in northwestern Indiana, near Chicago. If you have over 4,000 hours experience, please contact Debbie Carsky at (312) 327-0777.

OFFICE SPACE AVAILABLE: Franklin, Indiana. Lease or sell. 1500 sq. ft. new medical office ready for occupancy. Waiting room, business office, consultation room, nurses station, four exam rooms. Cathedral ceilings. Skylights. One minute drive west of Johnson County Memorial Hospital in rural setting. Beautiful view. For additional information, please call (317) 736-7310.

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INDIANA, North of Indianapolis: Immediate full time and part time positions in newly renovated emergency department at 135-bed facility. Hourly salary, flexible scheduling, malpractice insurance provided. For more information, contact: Emergency Consultants, Inc., 2240 South Airport Road, Suite 101, Traverse City, MI 49684; 1-800-253-1795 or in Michigan 1-800-632-3496.

FACULTY POSITION—Indiana University School of Medicine. One faculty position is currently available. Applicant must have completed an approved residency in Neurosurgery. Individual should have demonstrated ability and interest in investigative studies and teaching; demonstrated competency in microneurosurgical techniques, neurotrauma and cerebrovascular disease. The position will be responsible for patient care, teaching, and research related to Neurosurgery and will be located at Wishard Memorial Hospital. Contact in writing: Jay L. Grosfeld, M.D., Chairman, Department of Surgery, Indiana University School of Medicine, 545 Barnhill Drive, EM 244, Indianapolis, IN 46223. Indiana University is an Affirmative Action, Equal Opportunity Employer.

EXCELLENT OPPORTUNITIES for Neurologist, Cardiologist, Pediatrician and Gastroenterologist. Immediate part-time openings available for physicians in Hammond area to join busy six-member, multi-specialty medical group. Attractive compensation and benefit package. Please submit CV to Terrence Longo, P.O. Box 74, Schererville, IN 46375.

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WANTED: RADIOLOGIST, alternating weekend coverage. Primarily general diagnostic radiology. CT, ultrasound and nuclear medicine only on emergency basis. Flexible schedule. Send CV to Paul Tittel, M.D., 956 Market St., Charlestown, IN 47111, or call 812-256-2683.

Physician Placement Service

The Indiana State Medical Association operates a Physician Placement Service to help physicians and residents locate practice opportunities. For details, write: Physician Placement Coordinator, Indiana State Medical Association, 3935 N. Meridian St., Indianapolis, Indiana. 46208, or call (800) 382-1721 / (317) 925-7545.

INTERNAL MEDICINE—Hammond. Six-physician group seeks second internist. Prefer Board certified or Board eligible with primary care experience and Illinois and Indiana license. Attractive compensation and benefit package. Please submit CV to Terrence Longo, P.O. Box 74, Schererville, IN 46375.

BOARD CERTIFIED INTERNIST, FACP, critical care seeks group practice or to buy retiring physician practice. Art Gulati, M.D., 202 Arcadia Ave., Vernon Hills, IL 60060.

WANTED: TWO OR THREE Medical Doctors willing to work on a speculative basis. Fully staffed office, General Practice, no surgery, no OB. One M.D. in office, evening hours (Monday thru Friday, 5-9 p.m.; Saturday, 12 Noon-5 p.m.; Sunday, 11 a.m.-1 p.m. & 5-9 p.m.). All expenses paid. Split % of gross. No minimum guarantees. Send inquiries to: P.O. Box 184, New Castle, IN 47362.

ORTHOPEDIC SURGERY—Opportunities throughout the Midwest and Colorado. These positions offer both general orthopedic practices, along with subspecialized training. Partnership and group settings. Contact: Jean Malkasian, 250 Regency Ct., Waukesha, WI 53186—414/785-6500 (collect).

Membership Roster

The 1987-88 edition of the Indiana State Medical Association Membership Roster is now available. The roster is mailed automatically to all ISMA members.

Additional copies of the roster will be sold for $15.00 each for a physician member and $30.00 each for a non-member, payable in advance. Checks should be payable to the Indiana State Medical Association.

For more information or to order copies, write to the ISMA Membership Department, Attn: Rosanna Iler, 3935 N. Meridian St., Indianapolis, Ind. 46208.

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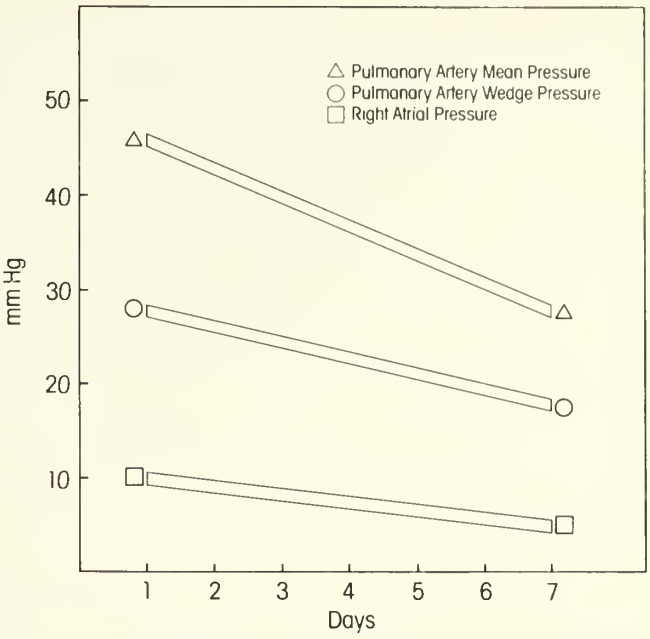
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Please see references and summary of product information on preceding page.

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JULY 1987 VOL.80 NO.7

INDIANA MEDICINE

The Journal of the Indiana State Medical Association

DISPLAY SHELVES

Death, Divorce, Critical Illness

Helping Family Members Cope

Medicine and Health Care in America

A preview of the 1990s

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INDIANA MEDICINE

Vol. 80, No. 7
JULY 1987

Devoted to the interests of the medical profession and public health in Indiana since 1908.

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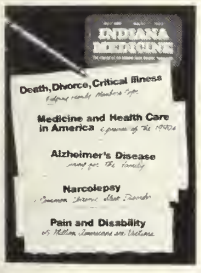
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ABOUT THE COVER

How the physician can help family members adapt to such traumatic events as death, divorce and critical illness is our CME subject this month. Also of special interest is "The Strategic Context of Medicine and Health Care in America," which examines the projected operating environment of health care during the next 10 years.—COVER BY FRED KINGHORN

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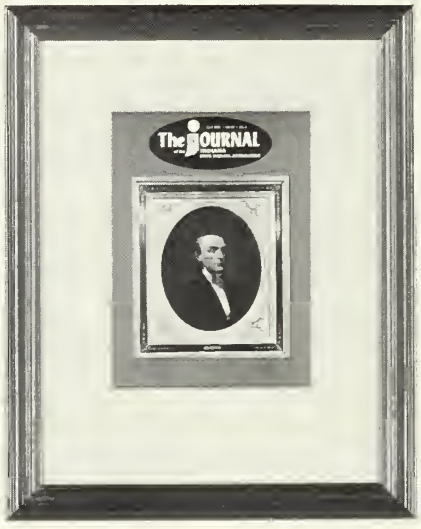
CHARLES A. BONSETT, M.D., Indianapolis

MEDICAL ALUMNI DAY was May 20 at Indiana University School of Medicine. On the preceding evening, a number of classes met to hold their own individual reunions. One such class was that of 1952 whose members had no difficulty recognizing each other, in spite of the attrition of years, thanks to the foresight of Dr. Emmet Pierce. He provided name tags with an enlarged copy of the individual's graduation photograph and the name printed large and bold enough so that the viewer could make identification at a distance.

The class of '52 listened attentively to a slide program concerning three physicians, Hippocrates, Sir William Osler and John Stough Bobbs. These three men had in common the fact that they were all medical educators. Hippocrates is still well known although his oath, regarded by Osler as the medical equivalent of the Golden Rule, is rarely heard anymore.

The relatively unknown physician of the trio is Dr. John Bobbs. This is unfortunate because Indiana citizens in general, and its physicians in particular, are indebted to Bobbs for having been the force that brought organized medical education to life in Indiana (in 1869).

Strictly speaking, Indiana University School of Medicine had its beginning in 1903 in the sense that that date marks the commencement of the school's activity in Bloomington. It had been approved for the first year basic sciences program by that date. In order for the school to gain a four-year accreditation, added facilities and a tremendous number of clinical teachers were required. These were ultimately provided by volunteers from the three proprietary medical schools (two in Indianapolis, one in Fort Wayne). These three schools united with I.U. in 1908



JOHN STOUGH BOBBS

The Relatively Unknown Physician Who Brought Organized Medical Education to Life in Indiana

to establish a first class four-year school, one of the few medical schools in the country to receive a favorable review in the 1910 Flexnor report.

A charter does for a medical school what a license does for a marriage—it makes the initiative legal if it does nothing else. And the building is only an architectural symbol. The basic elements are the student and the teacher. If we look for the origin of I.U. School of Medicine in terms of its student-teacher sequences, we would trace the origin to Dr. John Bobbs.

The November 1986 cover of INDIANA MEDICINE featured the life-sized bronze plaque of Dr. Bobbs, and the Notes page told how this bas-relief had been created by the sculptor (Gutzon Borglum, who later did the Mt. Rushmore presidential memorial) and ultimately placed in the St. Clair Street public library in Indianapolis (1916).

Why wasn't the plaque located at Indiana University School of Medicine? One reason was that the school then had no library except for that at the St. Clair Street location, and that was perhaps the most beautiful building in town. Another was the fact that the proprietary schools that had united to form a state-supported school had been very competitive, and the process of union had evoked much bitterness and acrimony by the time the struggle passed through the Purdue-I.U. phase. The St. Clair Street location not only housed the biggest collection of medical books in the state and was a very handsome location, it was also neutral ground.

The animosities are buried in history and now Dr. Bobbs will finally come home. The plaque (which measures about 6x4 feet) will be removed to the medical school's new Medical Research Center and Library Building at the appropriate time in construction. And the library will have a display area for the demonstration of historical mementos so that the student (and teacher) can be reminded of those to whom we are all indebted.

The class of '52 struck the initiative to develop a fund to help pay the expenses associated with the move and to develop the library's display area.

One such means is illustrated here, a framed copy of a special reprint of the April 1980 JISMA cover showing the Bobbs portrait. This, as well as other mementos, are being prepared for contributors of substantial donations (fewer than a hundred copies of this cover were printed).

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WHAT'S NEW?

News of what is new in the medical supply industry is composed of abstracts from news releases by book publishers and manufacturers of pharmaceuticals, clinical laboratory supplies, instruments and surgical appliances. Each item is published as news and does not necessarily constitute an endorsement of a product or recommendation for its use by INDIANA MEDICINE or by the Indiana State Medical Association.

Mead Johnson Nutritional Division of Bristol-Myers announces FDA approval for marketing b-Capsa I single dose vial. It is the first available vaccine against Haemophilus Influenza type b, diseases in young children. The vaccine is manufactured by Praxis Biologics and marketed by Mead Johnson.

Ross Laboratories' PEDIALYTE RS® Oral Electrolyte Rehydration Solution has been renamed as REHYDRALYTE™ Oral Electrolyte Rehydration Solution. It is formulated to replace fluids and electrolytes lost by infants and children from acute diarrhea. It comes in nursing bottles and does not require mixing or diluting. For continued fluid and electrolyte maintenance following rehydration, a separate oral electrolyte maintenance solution such as PEDIALYTE Oral Electrolyte Maintenance Solution may be used.

Fisons Corporation has made available for health care professionals two new educational films. "An Eye For all Seasons" is a 17-minute presentation that discusses the diagnosis and treatment of allergic ocular disorders and includes a segment on giant papillary conjunctivitis. "Undermining Asthma" is a 20-minute film designed to provide the primary physician with updated information on the diagnosis and treatment of asthma.



"I charge $32 for an office call by a patient—twice that for an office call by a Get Rich Quick Salesman."



Brentwood Instruments has a new Spiroscan 2000 pulmonary function analyzer with computer-aided measurements and interpretations against predicted values and percentage of attainment. It measures FVC, FEF, PEF, MTV, and other derivatives. The 4½" printout gives a complete flow-volume loop, V-T graph and an MVV curve on the easy-to-read LCD.

Roche Diagnostic Systems announces availability of Abuscreen EIA, a new line of diagnostic tests used to detect drugs of abuse in urine. It represents a significant advance in the use of enzyme immunoassay technology for drug detection because of a unique "wash step" that removes adulterants capable of interfering with test results.

Marion Laboratories has received approval for marketing and nationwide distribution of Cardizem® (diltiazem HC1) tablets in two new dosage strengths. Cardizem 90mg and 120mg tablets are supplied in bottles of 100 and in Unit Dose Identification Paks of 100.

A colorful new catalog of the Classic Series of Ritter Medical Products has been released by Midmark Corporation. The catalog contains complete descriptions, photographs and specifications of seven power tables, four manual tables, 12 physician's stools, 17 units of modular cabinetry, two chairs and more than 50 accessories.

Golf is a frequent cause of tendinitis of the elbow, that steady, dull ache experienced by both duffers and professionals. It is often the result of a tight grip or tension at the moment of impact with the ball or divot. Studies show that an armband worn below the elbow helps most sufferers by compressing the extensor muscle tencon complex. The patented Aircast Pneumatic Armband uses an aircell, inserted in an adjustable Velcro strap, to exert 50% more compression on the muscle complex and less pressure around the arm. By focusing the pressure, the Aircast armband provides greater support and comfort with less constriction.

BGS Medical has FDA approval for marketing the first implantable electrical bone growth stimulator for the spine. "Osteostim HS11" increased the success rate of spinal fusions from 54% to 81% in a prospectively randomized controlled clinical study.



"I don't know how long this will take—But it will take a lot less time if you go stand somewhere else."

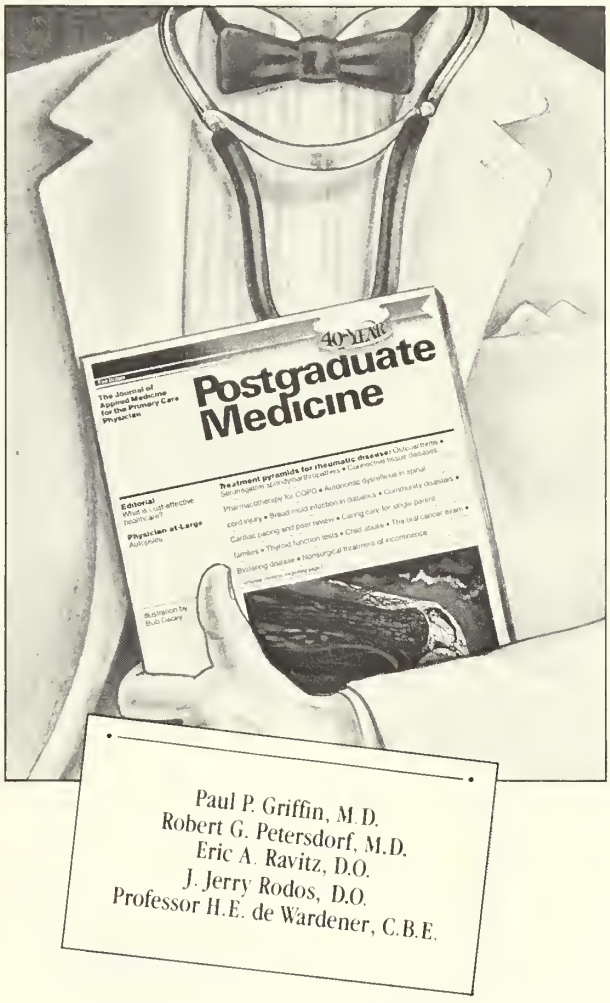
Dornier Medical Systems has received FDA approval for marketing a simpler model of the Dornier lithotripter. It is known as the "Tubless" Lithotripter and uses a water cushion to transmit the shock wave. It is the HM4 model and has several technical advancements over the HM3 model. Dornier has recently obtained registration of the mark ESWL® for the lithotripters. The initials represent the full designation of the lithotripter—Extracorporeal Shock Wave Lithotripter.

Capintec, Inc., in cooperation with Massachusetts General Hospital, has developed the CAPINTEC-VEST system which uses a miniaturized configuration of detectors and electronics to non-invasively monitor left ventricular function by measuring radioactivity tagged red blood cells as they pass through the left ventricle of the heart. In addition, conventional Holter-type information is provided along with the nuclear data and entered into a microcomputer-based system which analyzes and presents the data in a number of ways, as directed by the operator.

Fisons Corporation has announced the re-formulation of Opticrom® , 4% Ophthalmic Solution (cromolyn sodium ophthalmic solution). The new formulation removes the preservative, 2-phenylethanol (2-PE), to enhance patient comfort. Opticrom is useful in the treatment of red, itchy eyes that often accompany an allergic reaction.

Allscrips Pharmaceuticals has a complete office pharmacy system with a special financing plan. Payment is deferred and generally may be made from additional practice fees generated by in-office dispensing. The system provides a custom formulary of a physician's most prescribed name-brand or generic medications in pre-packaged, ready-to-dispense containers, a dispensing records system, lockable prescription storage cabinets, a prescription purchasing guide and in-office patient marketing aids.

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July
Symposium: Skeletal Problems
Special Article: Orthopedics 1947-1987 — Paul P. Griffin, M.D.

August
Symposium: Infectious Diseases
Special Article: Infectious Diseases 1947-1987 — Robert G. Petersdorf, M.D.

September 1
Symposium: Focus on Osteopathic Medicine — Eric A. Ravitz, D.O. Coordinator
Special Article: Osteopathic Medicine 1947-1987 — J. Jerry Rodos, D.O.

September 15
Symposium: Renal Disease
Special Article: Renal Disease 1947-1987 — Professor H.E. de Wardener, C.B.E.

40-YEAR
Postgraduate Medicine

Every Issue is a Celebration of Clinical Information

SO YOU WANT TO AVOID CANCER

Don't we all! Well, aside from avoiding tobacco and excessive sun, the best that we can do for ourselves at this time is to discover cancer at its earliest stage. To help us do this, the American Cancer Society has kept your doctor up-to-date with information that explains the newest and best methods of finding and diagnosing and treating the very dreadful scourge—Cancer.

With the use of the Society's latest news, the following simple chart was assembled by the writer for your careful consideration and guidance.

Age to begin	Female or male	Type of examination	When
16-25	F	Breast examination	Monthly by self; yearly in office
	F	Ultrasound of breasts	As indicated
	F, M	Chest x-ray	Yearly for smokers; others, every 3 years
25	F	Pap smear and pelvic examination	Yearly, beginning earlier when starting oral contraceptive pills
	F, M	Skin, nailbeds, nodes	Yearly
	F, M	Sublingual exam	Yearly
	F, M	Thyroid exam	Yearly
35	F	Mammogram	Initial test; then every 2 years age 40-50. Yearly after age 50.
	M	Ultrasound of scrotal contents	Every two years
40	F, M	Rectal exam	Yearly
	M	Scrotal exam	Yearly
50	M	Prostate exam	Yearly
	F, M	Sigmoidoscopy	Every 3 years
	F, M	Stools for blood	Yearly
	M	Ultrasound of prostate	Every 2 years

These recommendations are in accordance with the latest guidelines from the American Cancer Society.

Gene S. Pierce, M.D.
New Albany, Ind.

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* ROCEPHIN is indicated in the following infections: bacterial septicemia, bone and joint, intra-abdominal, lower respiratory tract, skin and skin structure, urinary tract, bacterial meningitis and gonorrhea. Please see summary of product information on adjacent page for indicated susceptible organisms.

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Please see adjacent page for summary of product information

Rocephin® IV·IM

ceftriaxone sodium/Roche

Before prescribing, please consult complete product information, a summary of which follows

MICROBIOLOGY. The bactericidal activity of ceftriaxone results from inhibition of cell wall synthesis. Ceftriaxone has a high degree of stability in the presence of beta-lactamases, both penicillinases and cephalosporinases, of gram-negative and gram-positive bacteria. Ceftriaxone is usually active against the following microorganisms *in vitro* and in clinical infections (see Indications and Usage):

GRAM-NEGATIVE AEROBES: *Enterobacter aerogenes, Enterobacter cloacae, Escherichia coli, Haemophilus influenzae* (including ampicillin-resistant strains), *H. parainfluenzae, Klebsiella* species (including *K. pneumoniae*), *Neisseria gonorrhoeae* (including penicillinase and nonpenicillinase-producing strains), *Neisseria meningitidis, Proteus mirabilis, Proteus vulgaris, Morganella morganii* and *Serratia marcescens*.

Note: Many strains of the above organisms that are multiply resistant to other antibiotics, e.g. penicillins, cephalosporins and aminoglycosides, are susceptible to ceftriaxone sodium.

Ceftriaxone is also active against many strains of *Pseudomonas aeruginosa*.

GRAM-POSITIVE AEROBES: *Staphylococcus aureus* (including penicillinase-producing strains) and *Staphylococcus epidermidis* (Note: methicillin-resistant staphylococci are resistant to cephalosporins, including ceftriaxone), *Streptococcus pyogenes* (Group A beta-hemolytic streptococci), *Streptococcus agalactiae* (Group B streptococci) and *Streptococcus pneumoniae*. (Note: Most strains of enterococci [*Streptococcus faecalis* and Group D streptococci] are resistant.)

Ceftriaxone also demonstrates *in vitro* activity against the following microorganisms, although the clinical significance is unknown:

GRAM-NEGATIVE AEROBES: *Citrobacter freundii, Citrobacter diversus, Providencia* species (including *Providencia rettgeri*), *Salmonella* species (including *S. typhi*), *Shigella* species and *Acinetobacter calcoaceticus*.

ANAEROBES: *Bacteroides* species, *Clostridium* species (Note: most strains of *C. difficile* are resistant).

SUSCEPTIBILITY TESTING: Standard susceptibility disk method: Quantitative methods that require measurement of zone diameters give the most precise estimate of antibiotic susceptibility. One such procedure (Bauer AW, Kirby WMM, Sherris JC, Turck M: Antibiotic Susceptibility Testing by a Standardized Single Disk Method, *Am J Clin Pathol* 45: 493-496, 1966; Standardized Disk Susceptibility Test, *Federal Register* 39: 19182-19184, 1974, National Committee for Clinical Laboratory Standards, Approved Standard ASM-2, Performance Standards for Antimicrobial Disk Susceptibility Tests, July 1975.) has been recommended for use with disks to test susceptibility to ceftriaxone.

Laboratory results of the standardized single-disk susceptibility test using a 30-mcg ceftriaxone disk should be interpreted according to the following three criteria:

1. Susceptible organisms produce zones of 18 mm or greater, indicating that the tested organism is likely to respond to therapy.
2. Organisms that produce zones of 14 to 17 mm are expected to be susceptible if a high dosage (not to exceed 4 gm per day) is used or if the infection is confined to tissues and fluids (e.g., urine) in which high antibiotic levels are attained.
3. Resistant organisms produce zones of 13 mm or less, indicating that other therapy should be selected.

Organisms should be tested with the ceftriaxone disk, since ceftriaxone has been shown by *in vitro* tests to be active against certain strains found resistant to cephalosporin class disks.

Organisms having zones of less than 18 mm around the cephalothin disk are not necessarily of intermediate susceptibility or resistant to ceftriaxone.

Standardized procedures require use of control organisms. The 30-mcg ceftriaxone disk should give zone diameters between 29 and 35 mm, 22 and 28 mm and 17 and 23 mm for the reference strains *E. coli* ATCC 25922, *S. aureus* ATCC 25923 and *P. aeruginosa* ATCC 27853, respectively.

DILUTION TECHNIQUES: Based on the pharmacokinetic profile of ceftriaxone, a bacterial isolate may be considered susceptible if the MIC value for ceftriaxone is not more than 16 mcg/ml. Organisms are considered resistant to ceftriaxone if the MIC is equal to or greater than 64 mcg/ml. Organisms having an MIC value of less than 64 mcg/ml, but greater than 16 mcg/ml, are expected to be susceptible if a high dosage (not to exceed 4 gm per day) is used or if the infection is confined to tissues and fluids (e.g., urine) in which high antibiotic levels are attained.

E. coli ATCC 25922, *S. aureus* ATCC 25923 and *P. aeruginosa* ATCC 27853 are also the recommended reference strains for controlling ceftriaxone dilution tests. Greater than 95% of MICs for the *E. coli* strain should fall within the range of 0.016 to 0.5 mcg/ml. The range for the *S. aureus* strain should be 1 to 2 mcg/ml, while for the *P. aeruginosa* strain the range should be 8 to 64 mcg/ml.

INDICATIONS AND USAGE: Rocephin is indicated for the treatment of the following infections when caused by susceptible organisms:

LOWER RESPIRATORY TRACT INFECTIONS caused by *Strep. pneumoniae, Streptococcus* species (excluding enterococci), *Staph. aureus, H. influenzae, H. parainfluenzae, Klebsiella* species (including *K. pneumoniae*), *E. coli, E. aerogenes, Proteus mirabilis* and *Serratia marcescens*.

SKIN AND SKIN STRUCTURE INFECTIONS caused by *Staph. aureus, Staph. epidermidis, Streptococcus* species (excluding enterococci), *E. cloacae, Klebsiella* species (including *K. pneumoniae*), *Proteus mirabilis* and *Pseudomonas aeruginosa*.

URINARY TRACT INFECTIONS (complicated and uncomplicated) caused by *E. coli, Proteus mirabilis, Proteus vulgaris, M. morganii* and *Klebsiella* species (including *K. pneumoniae*).

UNCOMPLICATED GONORRHEA (cervical, urethral and rectal) caused by *Neisseria gonorrhoeae* including both penicillinase and nonpenicillinase-producing strains.

PELVIC INFLAMMATORY DISEASE caused by *N. gonorrhoeae*.

BACTERIAL SEPTICEMIA caused by *Staph. aureus, Strep. pneumoniae, E. coli, H. influenzae* and *K. pneumoniae*.

BONE AND JOINT INFECTIONS caused by *Staph. aureus, Strep. pneumoniae, Streptococcus* species (excluding enterococci), *E. coli, P. mirabilis, K. pneumoniae* and *Enterobacter* species.

INTRA-ABDOMINAL INFECTIONS caused by *E. coli* and *K. pneumoniae*.

MENINGITIS caused by *H. influenzae, N. meningitidis* and *Strep. pneumoniae*. Ceftriaxone has also been used successfully in a limited number of cases of meningitis and shunt infections caused by *Staph. epidermidis* and *E. coli*.

PROPHYLAXIS: The administration of a single dose of ceftriaxone preoperatively may reduce the incidence of postoperative infections in patients undergoing coronary artery bypass surgery.

Although ceftriaxone has been shown to have been as effective as cefazolin in the prevention of infection following coronary artery bypass surgery, no placebo-controlled trials have been conducted to evaluate any cephalosporin antibiotic in the prevention of infection following coronary artery bypass surgery.

SUSCEPTIBILITY TESTING: Before instituting treatment with Rocephin, appropriate specimens should be obtained for isolation of the causative organism and for determination of its susceptibility to the drug. Therapy may be instituted prior to obtaining results of susceptibility testing.

CONTRAINDICATIONS: Rocephin is contraindicated in patients with known allergy to the cephalosporin class of antibiotics.

WARNINGS: BEFORE THERAPY WITH ROCEPHIN IS INSTITUTED, CAREFUL INQUIRY SHOULD BE MADE TO DETERMINE WHETHER THE PATIENT HAS HAD PREVIOUS HYPERSENSITIVITY REACTIONS TO CEPHALOSPORINS, PENICILLINS OR OTHER DRUGS. THIS PRODUCT SHOULD BE GIVEN CAUTIOUSLY TO PENICILLIN-SENSITIVE PATIENTS. ANTIBIOTICS SHOULD BE ADMINISTERED WITH CAUTION TO ANY PATIENT WHO HAS DEMONSTRATED SOME FORM OF ALLERGY, PARTICULARLY TO DRUGS. SERIOUS ACUTE HYPERSENSITIVITY REACTIONS MAY REQUIRE THE USE OF SUBCUTANEOUS EPINEPHRINE AND OTHER EMERGENCY MEASURES.

Pseudomembranous colitis has been reported with the use of cephalosporins (and other broad-spectrum antibiotics); therefore, it is important to consider its diagnosis in patients who develop diarrhea in association with antibiotic use.

ROCEPHIN® (ceftriaxone sodium/Roche)

Treatment with broad-spectrum antibiotics alters the normal flora of the colon and may permit overgrowth of clostridia. Studies indicate a toxin produced by *Clostridium difficile* is one primary cause of antibiotic-associated colitis. Cholestyramine and colestipol resins have been shown to bind to the toxin *in vitro*.

Mild cases of colitis respond to drug discontinuance alone. Moderate to severe cases should be managed with fluid, electrolyte and protein supplementation as indicated.

When the colitis is not relieved by drug discontinuance or when it is severe, oral vancomycin is the treatment of choice for antibiotic-associated pseudomembranous colitis produced by *C. difficile*. Other causes of colitis should also be considered.

PRECAUTIONS: *GENERAL*: Although transient elevations of BUN and serum creatinine have been observed at the recommended dosages, the nephrotoxic potential of Rocephin is similar to that of other cephalosporins.

Ceftriaxone is excreted via both biliary and renal excretion (see Clinical Pharmacology). Therefore, patients with renal failure normally require no adjustment in dosage when usual doses of Rocephin are administered, but concentrations of drug in the serum should be monitored periodically. If evidence of accumulation exists, dosage should be decreased accordingly.

Dosage adjustments should not be necessary in patients with hepatic dysfunction, however, in patients with both hepatic dysfunction and significant renal disease, Rocephin dosage should not exceed 2 gm daily without close monitoring of serum concentrations.

Alterations in prothrombin times have occurred rarely in patients treated with Rocephin. Patients with impaired vitamin K synthesis or low vitamin K stores (e.g., chronic hepatic disease and malnutrition) may require monitoring of prothrombin time during Rocephin treatment. Vitamin K administration (10 mg weekly) may be necessary if the prothrombin time is prolonged before or during therapy.

Prolonged use of Rocephin may result in overgrowth of nonsusceptible organisms. Careful observation of the patient is essential. If superinfection occurs during therapy, appropriate measures should be taken.

Rocephin should be prescribed with caution in individuals with a history of gastrointestinal disease, especially colitis.

CARCINOGENESIS, MUTAGENESIS, IMPAIRMENT OF FERTILITY: Carcinogenesis: Considering the maximum duration of treatment and the class of the compound, carcinogenicity studies with ceftriaxone in animals have not been performed. The maximum duration of animal toxicity studies was six months.

Mutagenesis: Genetic toxicology tests included the Ames test, a micronucleus test and a test for chromosomal aberrations in human lymphocytes cultured *in vitro* with ceftriaxone. Ceftriaxone showed no potential for mutagenic activity in these studies.

Impairment of Fertility: Ceftriaxone produced no impairment of fertility when given intravenously to rats at daily doses up to 586 mg/kg/day, approximately 20 times the recommended clinical dose of 2 gm/day.

PREGNANCY: Teratogenic Effects: Pregnancy Category B. Reproductive studies have been performed in mice and rats at doses up to 20 times the usual human dose and have no evidence of embryotoxicity, fetotoxicity or teratogenicity. In primates, no embryotoxicity or teratogenicity was demonstrated at a dose approximately three times the human dose.

There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproductive studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed.

Nonteratogenic Effects: In rats, in the Segment I (fertility and general reproduction) and Segment III (perinatal and postnatal) studies with intravenously administered ceftriaxone, no adverse effects were noted on various reproductive parameters during gestation and lactation, including postnatal growth, functional behavior and reproductive ability of the offspring, at doses of 586 mg/kg/day or less.

NURSING MOTHERS: Low concentrations of ceftriaxone are excreted in human milk. Caution should be exercised when Rocephin is administered to a nursing woman.

PEDIATRIC USE: Safety and effectiveness of Rocephin in neonates, infants and children have been established for the dosages described in the Dosage and Administration section.

ADVERSE REACTIONS: Rocephin is generally well tolerated. In clinical trials, the following adverse reactions, which were considered to be related to Rocephin therapy or of uncertain etiology, were observed:

LOCAL REACTIONS: pain, induration or tenderness at the site of injection (1%). Less frequently reported (less than 1%) was phlebitis after IV administration.

HYPERSENSITIVITY—rash (1.7%). Less frequently reported (less than 1%) were pruritus, fever or chills.

HEMATOLOGIC—eosinophilia (6%), thrombocytosis (5.1%) and leukopenia (2.1%). Less frequently reported (less than 1%) were anemia, neutropenia, lymphocytosis, thrombocytopenia and prolongation of the prothrombin time.

GASTROINTESTINAL—diarrhea (2.7%). Less frequently reported (less than 1%) were nausea or vomiting and dysgeusia.

HEPATIC—elevations of SGOT (3.1%) or SGPT (3.3%). Less frequently reported (less than 1%) were elevations of alkaline phosphatase and bilirubin.

RENAL—elevations of the BUN (1.2%). Less frequently reported (less than 1%) were elevations of creatinine and the presence of casts in the urine.

CENTRAL NERVOUS SYSTEM—headache or dizziness were reported occasionally (less than 1%).

GENITOURINARY—moniliasis or vaginitis were reported occasionally (less than 1%).

MISCELLANEOUS—diaphoresis and flushing were reported occasionally (less than 1%).

Other rarely observed adverse reactions (less than 0.1%) include leukocytosis, lymphocytosis, monocytosis, basophilia, a decrease in the prothrombin time, jaundice, glycosuria, hematuria, bronchospasm, serum sickness, abdominal pain, colitis, flatulence, dyspepsia, palpitations and epistaxis.

DOSAGE AND ADMINISTRATION: Rocephin may be administered intravenously or intramuscularly. The usual adult daily dose is 1 to 2 gm given once a day (or in equally divided doses twice a day) depending on the type and severity of the infection. The total daily dose should not exceed 4 grams.

For the treatment of serious miscellaneous infections in children, other than meningitis, the recommended total daily dose is 50 to 75 mg/kg (not to exceed 2 grams), given in divided doses every 12 hours.

Generally, Rocephin therapy should be continued for at least two days after the signs and symptoms of infection have disappeared. The usual duration is 4 to 14 days; in complicated infections, longer therapy may be required.

In the treatment of meningitis, a daily dose of 100 mg/kg (not to exceed 4 grams), given in divided doses every 12 hours, should be administered with or without a loading dose of 75 mg/kg.

For the treatment of uncomplicated gonococcal infections, a single intramuscular dose of 250 mg is recommended.

For preoperative use (surgical prophylaxis), a single dose of 1 gm administered ½ to 2 hours before surgery is recommended.

When treating infections caused by *Streptococcus pyogenes*, therapy should be continued for at least ten days.

No dosage adjustment is necessary for patients with impairment of renal or hepatic function, however, blood levels should be monitored in patients with severe renal impairment (e.g., dialysis patients) and in patients with both renal and hepatic dysfunctions.

HOW SUPPLIED: Rocephin (ceftriaxone sodium/Roche) is supplied as a sterile crystalline powder in glass vials and piggyback bottles. The following packages are available:

Vials containing 250 mg equivalent of ceftriaxone. Boxes of 10 (NDC 0004-1962-01)

Vials containing 500 mg equivalent of ceftriaxone. Boxes of 10 (NDC 0004-1963-01)

Vials containing 1 gm equivalent of ceftriaxone. Boxes of 10 (NDC 0004-1964-01)

Piggyback bottles containing 1 gm equivalent of ceftriaxone. Boxes of 10 (NDC 0004-1964-03)

Vials containing 2 gm equivalent of ceftriaxone. Boxes of 10 (NDC 0004-1965-01)

Piggyback bottles containing 2 gm equivalent of ceftriaxone. Boxes of 10 (NDC 0004-1965-03)

Bulk pharmacy containers, containing 10 gm equivalent of ceftriaxone. Boxes of 1 (NDC 0004-1971-01)

NOT FOR DIRECT ADMINISTRATION.

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References:

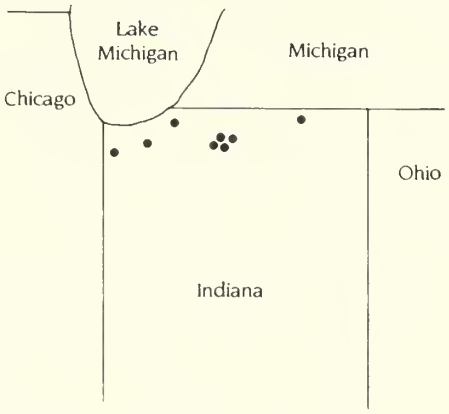
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3. Richards DM, *et al*: *Drugs* 27:469-527, 1984.
4. Cleeland R, Squires E: *Am J Med* 77:3-11, Oct 19, 1984.
5. Tanner DJ, Nazarian MQ: *Am J Med* 77:104-111, Oct 19, 1984.

Meridian wants you to know

What you should know about Meridian Healthcare services and facilities.

Meridian Healthcare operates eight major facilities in northern Indiana — in Elkhart, Michigan City, Dyer, Gary and South Bend.

Meridian provides a full range of residence and care options, including The Milton Home — a luxurious lifestyle for fully independent seniors — and The Manor, which offers home-like surroundings for those needing minimal assistance. Meridian Nursing Centers offer both long-term and short-term, or "respite," care. Rehabilitative services, such as physical, speech and occupational therapies are also available. Meridian Nursing Center — Dyer operates a Special Care Unit for the needs of the critically ill patient.



Meridian has prepared a referral information kit detailing our facilities and services. In it you will find information on how you and your patients' families in the northern Indiana areas served by our eight facilities can take advantage of the many nursing care programs that we offer. This kit is available, without charge, to physicians and hospital administrations. To obtain a copy for your office, please clip and send the coupon below.

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FUTURE FILE

Indiana University CME

Aug. 5-7: Pan American Sports Medicine Congress XII, Indiana University, Bloomington.

Aug. 28-29: Thyroid and Parathyroid Disease, Lincoln Hotel and University Convention Center, Indianapolis.

Sept. 11: Office Orthopedics, Inn of the Four Winds, Bloomington.

Sept. 11: Methods of Facial Skeletal Fixation, Lincoln Hotel, Indianapolis.

Sept. 18: Indiana Neonatal Society meeting, Lincoln Hotel, Indianapolis.

Sept. 30: Current Concepts in Diabetic Foot Infections, Lincoln Hotel, Indianapolis.

Oct. 14: Symposium on AIDS, Lincoln Hotel, Indianapolis.

For more information, contact Melody Dian, CME, I.U. School of Medicine—(317) 274-8353.

Allergies

"Allergy, Immunology and Rheumatology: Review and Update" is the title of a CME presentation October 9 and 10 at the University of Kansas Medical Center. Credit for AMA Category 1 and AAFP.

The correspondent is Eileen Buttron, U. of K. Medical Center, Office of CME, 39th and Rainbow Blvd., Kansas City, Kansas 66103—(913) 588-4480.



"You've made medical history. It would appear that you will have not one, but two articles about you in the medical journal next month."

The *Journal of the American Medical Association* publishes a list of CME courses for the United States twice yearly. The January listing features courses offered from March through August; the July listing features courses offered from September through February.

Methodist Hospital CME

Oct. 9-10: Advanced Cardiac Life Support Course, Methodist Hospital, Indianapolis.

Nov. 4: Lester Bibler, M.D., Annual Family Practice Lectureship on Practical Topics in the Care of the Elderly, Methodist Hospital.

Nov. 13-14: Advanced Trauma Life Support Course, Methodist Hospital.

(September CME courses were listed on page 514 of the June issue, INDIANA MEDICINE.)

For more information, contact Dixie Estridge, CME coordinator, Graduate Medical Center, Methodist Hospital of Indiana—(317) 929-3733.

Pediatrics Symposium

The 15th Annual Fall Pediatric Surgery/Pediatrics Symposium sponsored by the Indiana University School of Medicine will be held in Indianapolis Oct. 7 and 8. The symposium, addressing "Childhood Trauma and Critical Care," will be held at the Lincoln Hotel and University Conference Center.

Guest speakers will include Dr. Peter K. Kottmeier, Dr. Burton H. Harris and Dr. Martin Eichelberger.

For information, contact Dr. Jay L. Grosfeld, Riley Hospital, 702 Barnhill Drive, Indianapolis 46223—(317) 274-4681, or the CME Registrar at (317) 274-8353.

Cancer Conference

The Cincinnati Cancer Conference VI on the subject of sarcoma will meet Nov. 13 and 14.

For details, contact Thomas J. O'Connor, CME, Bethesda Hospital, 619 Oak St., Cincinnati, Ohio 45206—(513) 569-6323.

St. Vincent Hospital CME

St. Vincent Hospital and Health Care Center, Indianapolis, announces the following CME programs.

July 7: New Insights into the Causes of MI, James Muller, M.D., Harvard Medical School, St. Vincent Hospital.

Aug. 1-2: Ultrasound Physics Seminar, Cooling Auditorium, St. Vincent Hospital.

Oct. 7: 12th Annual Arthur B. Richter Lectureship in Clinical Cardiology; Thomas N. James, M.D., guest lecturer; Sheraton Marten House.

Oct. 21-23: Intervention in Cardiovascular Disease; David Cumberland, M.D. and Eric Topol, M.D., guest lecturers; Cooling Auditorium, St. Vincent Hospital.

For more information, call Marilyn Soltermann, CME coordinator—(317) 871-3460.

Impairment

The AMA National Conference on the Impaired Health Professional will be held October 8 to 11 at the Drake Hotel, Chicago. The major theme will be: "Impaired Health Professionals: Educating Ourselves, Educating Others."

For further information contact Janice J. Robertson, AMA Department of Substance Abuse, 535 N. Dearborn St., Chicago 60610—(312) 645-5083.

Child Advocacy

"Child Advocacy as a New Role for Professionals" is the title of a conference to be conducted Sept. 10-12 at the Concourse Hotel, Madison, Wisc.

The course will be oriented to physicians, lawyers, health professionals and educators. It is accredited for 15 Category 1 hours. The fee for physicians is $250. The conference will address advocacy issues such as child abuse and neglect, joint custody, teenage pregnancy, and termination of parents' rights.

The correspondent is Ann Bailey, WARF Bldg., Room 456, 610 Walnut St., Madison, Wisc. 53705.

Newborn Symposium

The 21st Annual Newborn Symposium will be conducted at the Kosair Children's Hospital Auditorium, Louisville, October 15 and 16. Larry N. Cook, M.D., will be the program director. Dr. Cook is Professor and Associate Chairman, Department of Pediatrics, University of Louisville.

Nutrition and Disease

"The Role of Nutrition in the Origins of Disease" will be the topic of the seventh annual Bristol-Myers Symposium on Nutrition Research, to be held Sept. 21-22 at the Fairmont Hotel in San Francisco.

Registration information can be obtained from Helen Shaw Miller, Program Coordinator, Office of Continuing Education, University of California, Davis, School of Medicine, 2701 Stockton Blvd., Sacramento, Calif. 95817—(916) 453-4390.

Child Abuse

"To Improve the Recognition, Evaluation and Care of Children Suspected of Having Been Sexually Abused" is the subject of a symposium to be held in Kokomo Sept. 22.

Four other such one-day symposiums, accredited for five Category 1 hours, were scheduled in Indiana during April, May and June.

The Kokomo meeting is tentative. Call Dr. Roberta Hibbard at (317) 274-8271 for confirmatory information.

Infectious Diseases

"Advances in the Management of Infectious Diseases" is the subject of a CME course to be conducted at the Grand Hotel, Mackinac Island, Mich., Aug. 14-17.

The University of Michigan Medical School is the host. ACCME Category 1 credits are 10. Course fee is $250.

Contact Betty Phillips, CME, Towsley Center, Box 0201, University of Michigan Medical School, Ann Arbor, Mich. 48109—(313) 763-1400.

ASPEN Meetings

The American Society for Parenteral and Enteral Nutrition (ASPEN) will conduct its annual postgraduate course Sept. 10-11 at the Palmer House, Chicago, The subject will be "Clinical Nutrition Support: A Multidisciplinary Case Management Approach."

ASPEN also announces that its 12th Clinical Congress is scheduled for Jan. 17-20, 1988, at Bally's Hotel, Las Vegas.

For details, write ASPEN, 8605 Cameron St., Suite 500, Silver Spring, Md. 20910.

Clinical Cardiology

"Clinical Cardiology 1987: Current and Future Trends in Diagnosis and Therapy" is the title of a CME meeting December 27 to 30 at the Marriott World Center, Orlando, Florida. AMA Category 1 and AAFP credit. An update on current important clinical cardiovascular topics will be presented by national authorities.

The correspondent is Sarah Azlakson, 465B WARF Bldg., 610 Walnut St., Madison, Wisc. 53705—(608) 263-2856.

Organ Transplant

The International Organ Transplant Forum meets in Pittsburgh September 8 to 11. A comprehensive 4-day program featuring the world's leaders in transplantation will be presented.

For full information contact Ann Metzger, International Organ Transplantation Forum, DeSoto at O'Hara Streets, Pittsburgh, Pa. 15213.

Doppler Symposium

A symposium in Doppler and 2-D Echocardiography will be conducted Sept. 25 through Oct. 1 in Bethesda, Md. The meeting is under the aegis of the Institute for Medical Studies.

The correspondent is Lisa Krehbiel of the Institute, 30131 Town Center Drive, Suite 215, Laguna Niguel, Calif. 92677—(714) 495-4499.

Medicine and Religion

"Medicine and Religion: Issues in the Eighties" is the subject of an AMA/AAFP-approved CME course Oct. 20-21 at the University of Kansas Medical Center, Kansas City.

The correspondent is Eileen Buttron, Office of CME, 39th and Rainbow Blvd., Kansas City, Kan. 66103—(913) 588-4480.

Prison Health Care

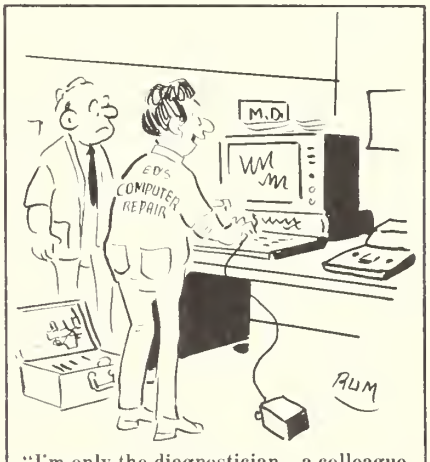
The 11th National Conference on Correctional Health Care will meet in Chicago November 5 to 7. The National Commission has issued a call for papers for the meeting, to be held at the Palmer House.

For further information write or phone Jodie Manes at 2000 North Racine, Suite 3500, Chicago 60614—(312) 528-0818.

Cardiac Life Support

"Advanced Cardiac Life Support Provider Course" is the title of a CME course Sept. 2 and 3 at the Student Center, Fransisco Lounge at the University of Kansas Medical Center, Kansas City. AMA Category 1 and AAFP credits are rated at 13.5 hours.

The correspondent is David M. Baldwin, Office of CME, 39th and Rainbow Blvd., Kansas City, Kan. 66103—(913) 588-4488.



"I'm only the diagnostician—a colleague of mine will perform the actual operation."

Privatization: A Big Word for a Helpful Concept

JOHN W. WALLS
President
Indiana Chamber of Commerce

PRIVATIZATION is a word that conjures up images of bureaucratic terminology.

Actually, it's an honorable word whose meaning has been strongly espoused by outspoken anti-bureaucrats like Ronald Reagan.

Who says bureaucrats are the only people who can use big words?

The President and others believe that many activities and facilities created and paid for directly by federal, state and local governments could be done or built more efficiently and with less cost if accomplished by private sources working in cooperation with government agencies.

Anyone who has ever had to deal with government red tape would likely agree that this makes sense.

One of the major reasons for seeking alternative approaches, like privatization, is the cutback of federal funding in the post Graham-Rudman, budget-cutting era.

Rightly or wrongly, states and communities had grown dependent on the federal government for funding basic public services such as sewer, water and waste disposal facilities.

The Indiana Chamber of Commerce and many other concerned citizens have strongly supported cuts in federal spending. This is an area past due for such cuts.

Cutbacks: Challenge and Opportunity

Appropriate diminishing of federal expenditures does create some problems.

According to a recent congressional budget office study, Indiana is headed for a $28 billion shortfall in funding basic infrastructure (roads, sewers, public facilities, etc.) by the turn of the century if ways are not found to replace lost federal dollars.

State and local governments cannot possibly fill all of this gap. Privatization can help.

All across the country private companies are springing up to work with governments in getting the job done with less public debt and taxes.

Look at some of the advantages:

1. Private development and management frees other public resources for use in public safety, health and welfare services.

2. Private operations save money—a *lot* of money.

3. New technologies, with resulting efficiencies, are easier to use through private ventures.

Can Privatization be Used in Indiana?

State law in Indiana now inhibits the use of the privatization approach. A bill to permit expanded use of the concept was recently considered and rejected by the House of Representatives despite strong support by many legislators who believe that private dollars could greatly help the threatened shortage of program capability.

Unfortunately, some "paper tigers" were thrown into discussions leading to rejection of the proposal.

House Minority Leader Michael K. Phillips accused supporters of mounting a "veiled attack on the union movement" despite evidence to the contrary in other states. There is certainly as much union activity in private business as in government.

It was argued that privatization might lead to "cronyism" (preferential treatment of friends in awarding contracts), but careful bidding requirements can be built into the process. Besides, the present system already tends to favor friends and supporters.

Arguments like these, mostly with smoke screen elements, ignore the real problem and create unnecessary partisan differences which are damaging to sincere efforts at bringing some much needed relief to infrastructure financing.

Reliable public services at reasonable prices are very important and affect Indiana's ability to attract and retain businesses. Dealing successfully with this challenge may be more effective support for economic development than incentive packages to lure new jobs.

Let's hope Indiana legislators will set aside partisan political rhetoric and deal with the real issue at hand.

We've boasted considerably about Indiana's public-private partnership. Privatization is certainly yet another way to practice what we preach!



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PEOPLES DRUG

Recent Indiana Court Rulings

Hospital That Terminated MD's Staff Privileges Not Liable For Antitrust

A physician whose staff privileges were terminated could not maintain an antitrust action against the hospital, a federal appellate court for Indiana has ruled.

The physician, an anesthesiologist, was an employee of the anesthesia group that had an exclusive contract to provide anesthesiology services to the hospital. She was granted probationary staff privileges at the hospital in August 1981. About eight months later, the head of the anesthesiology group, who was also the chairman of the anesthesiology department of the hospital, retired. The hospital then sought another exclusive provider for anesthesiology services.

The hospital entered into a contract with a board-certified anesthesiologist. That contract granted her exclusive rights to perform anesthesiology services at the hospital except that two other physicians could continue to practice anesthesiology at the hospital. The new anesthesiologist also became head of the anesthesiology department. She formally evaluated the work of the complaining anesthesiologist and found it unsatisfactory.

The new anesthesiologist recommended to the hospital's credentials committee that the anesthesiologist be denied staff privileges. It recommended termination because of medical inability and in part because it was discovered that the physician had falsified her original application for staff privileges by omitting any mention of her stay at another hospital which refused her staff privileges. The executive committee and a special hearing committee also concurred in the recommendation. The recommendation was ultimately adopted by the hospital, which suspended her probationary privileges in October 1982 and terminated them in January 1983.

The physician filed an action against the hospital claiming violation of antitrust laws by acting to restrain trade and for violation of her federal civil rights. The trial court entered judgment in favor of the hospital, and the appellate court affirmed.

The court noted that in several prior cases it had held that actions taken within the Indiana medical peer review process that result in the suspension of staff privileges are exempt from federal antitrust law under the state action doctrine. The court said that future antitrust challenges under the Indiana medical peer review process may be deemed to be frivolous because of the clear bar of the state action doctrine.

The court also noted that in 1984 U.S. Supreme Court opinion which dealt with an exclusive anesthesiology contract, the physician challenging the contract could not show that the hospital in question had a market share of more than 30 per cent. The court held that 30 per cent was not sufficient to maintain an antitrust action for an illegal tying arrangement. The court pointed out that the record indicated that the market share of the hospital in this case was substantially below 30 per cent.

In considering the physician's civil rights claim, the court held that the ultimate issue is whether the alleged infringement of the physician's rights are fairly attributable to the state. The physician argued that since her antitrust claim was barred because of the state action doctrine, the necessary state action must be present to support her civil rights claim. The court held that the state can be held responsible for a private decision only when it has exercised coercive power or has provided such significant encouragement that the choice must in law be deemed to be that of the state.

The court found that only private actors made the decision here, and although it was made within the context of the Indiana peer review process, that was not enough to support a civil rights violation by state action. The court said that the decision was based on medical judgments made by private parties according to professional standards that were not established by the state.

Finally, the court considered the physician's state law claims as to whether the proceedings employed by the hospital were fair and reasonable and whether the standards were applied arbitrarily and capriciously. The court held that the hospital's bylaws were followed and the actions of the parties implementing the procedures were not arbitrary or capricious—*Ezpeleta v. Sisters of Mercy Hospital Corporation*, 800 F.2d 119 (C.A.7, Ind., Aug. 27, 1986)

Physician Sues Hospital For Employment Discrimination

A physician had a claim of employment discrimination against a hospital even though she was not an employee of the hospital, a federal appellate court for Indiana has ruled.

The physician was born in Korea and

Reprinted from recent issues of *The Citation*, a medicolegal digest for physicians prepared by the Office of the General Counsel of the American Medical Association.

was a citizen of the U.S. In August 1982, the hospital granted her associate staff privileges. Five months later the administrator of the hospital notified her that her staff privileges were summarily suspended. The letter stated that the suspension was based on a formal complaint against her filed by another physician.

The complaint dealt with an incident that involved her entering the room of another physician's patient, "and in a loud, abusive manner, castigating (the other physician) in a most demeaning, unethical manner." The letter noted that the administrator had spoken to the physician the previous week about previous incidents of unprofessional behavior within the hospital.

The physician requested a meeting of the executive committee to discuss her summary suspension. In a letter to her dated February 10, 1983, the executive committee stated that it had unanimously upheld her summary suspension without modification. The letter further advised her that she would have to undergo complete physical, psychological, and psychiatric examinations and successfully complete a certified physician retraining program before reapplying for privileges in the future. None of those requirements were in the hospital bylaws nor were they uniformly required of physicians seeking staff privileges at the hospital. The board of directors refused to overturn the suspension.

On appeal from a trial court's dismissal of her complaint, the appellate court said that the physician did not have a claim for antitrust violations against the hospital. First, it found that the case came within the court's 1984 decision in *Marrese v. Interqual Inc.*, 748 F.2d 373 (7th Cir. 1984), cert. denied, 105 S.Ct. 3501 (1985) which held that actions taken within the Indiana medical peer review process that result in the suspension of staff privileges are exempt from federal antitrust law under the state action doctrine. The fact that charges against the physician here may have had more to do with professional relationships rather than quality of care would not distinguish the case from *Marrese*.

Also her allegations that the hospital purchased drugs and medical supplies and equipment which travelled in interstate commerce, that medical bills were paid through out-of-state private and governmental insurance programs, and that the hospital provided medical services to out-of-state patients were insufficient to show interstate commerce to support an antitrust claim.

The court said that the physician had stated a claim for racial discrimination. In addition, she properly alleged a claim against the hospital for discrimination in employment practices. The court acknowledged that the physician was not an employee of the hospital, but was an independent contractor. The court said that the hospital's actions may have interferred with the physician's employment relationships with her patients.—*Doe v. St. Joseph's Hospital of Fort Wayne*, 788 F.2d 411 (C.A.7, Ind., April 2, 1986)

Committed Mental Patient Loses Suit To Stop Forcible Administration Of Medication

Involuntarily committed mental patients have liberty interests protected by the Fourteenth Amendment in avoiding unwanted administration of antipsychotic drugs, an Indiana appellate court has ruled.

A 28-year-old man with a history of hospitalizations and treatment for mental illness was involuntarily confined to a state hospital. He had not been adjudicated an incompetent. In the recent past, he had had severe delusions and had attempted suicide. His psychiatrist at the hospital diagnosed his problem as chronic undifferentiated schizophrenia. The psychiatrist said that he was not well enough to leave the hospital, although he was not currently dangerous. He had shown violence when he was not taking his medication.

The patient appealed a court order continuing his commitment to the hospital and permitting the state to forcibly give him antipsychotic medications. The patient contended that a competent, involuntarily committed mental patient had a constitutional right to refuse medication in the absence of an emergency situation. The court agreed that the patient had this right but said that such right was not absolute and could be restricted if the restriction furthered a substantial governmental interest. The patient argued that the state could administer antipsychotic drugs only when the patient would harm himself or others without the medication.

The court said that to satisfy due process requirements the state must prove by clear and convincing evidence that the patient's mental condition required him to be hospitalized and treated for his own and the public's protection. The trial court found that the patient could not make rational choices regarding his own care. His psychiatrist was of the opinion that the benefits of the medications outweighed the disadvantages. The court pointed out that the side-effects of the drugs presumably would be countered by antiparkinsonian medications. The court said that the trial court's decision also satisfied due process concerns because the court deferred to the judgment of the psychiatrist, a qualified professional, whose opinion was entitled to a presumption of correctness. The court affirmed the trial court's judgment.—*In re the Mental Commitment of M.P.*, 500 N.E.2d 216 (Ind. Ct. of App., Nov. 18, 1986)

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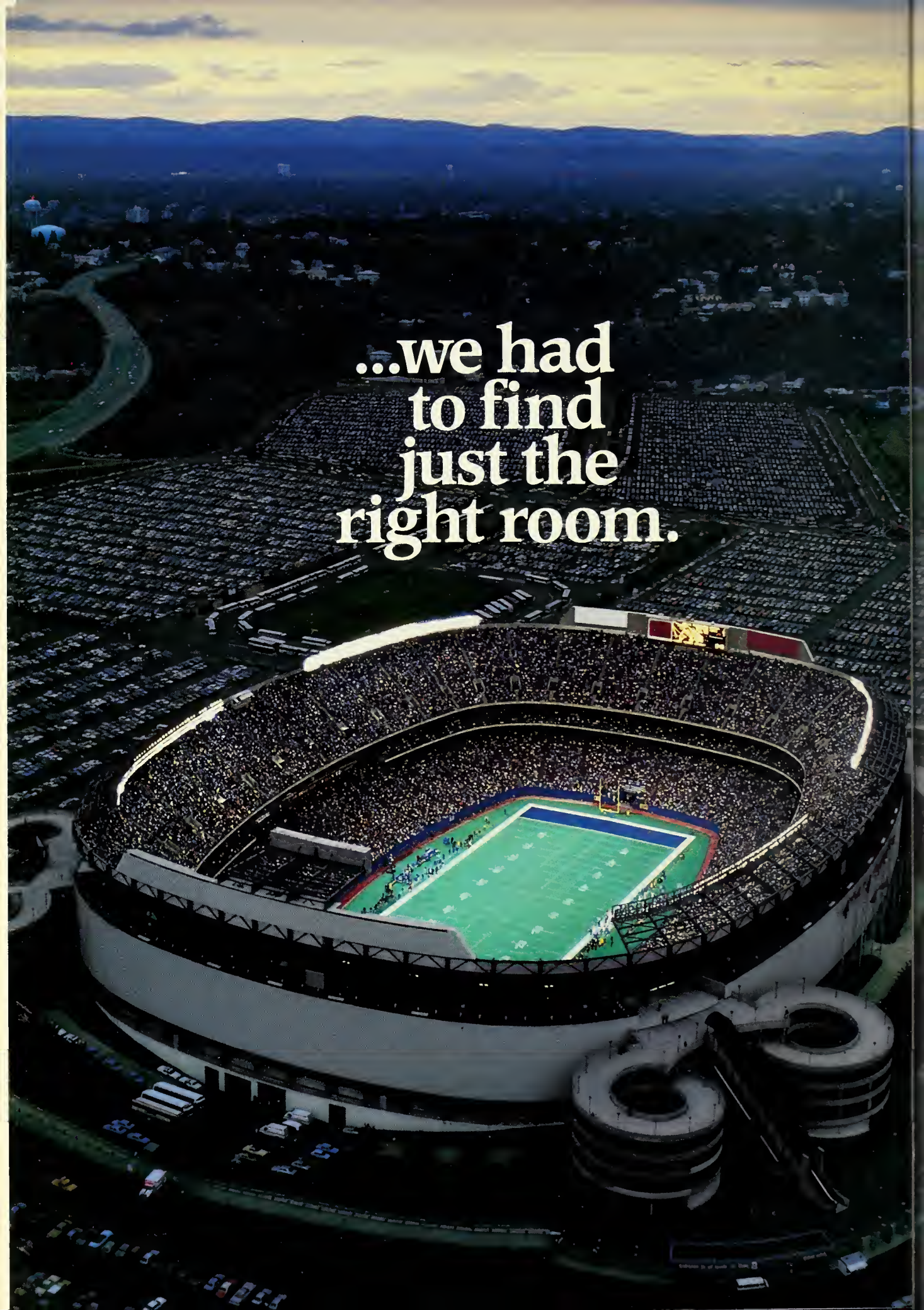
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A recent double-blind, placebo-controlled, crossover study in 138 hypertensive patients[2] revealed that INDERAL LA has a side effects profile unsurpassed by atenolol or metoprolol—which shows how well-tolerated once-daily INDERAL LA can be.

Sole therapy or concomitant therapy? Fifty-nine percent of the time, INDERAL LA stood on its own.

The patients in the nationwide compliance trial were no different from yours. Generally when the antihypertensive regimen is complicated, compliance may become a problem. So, the effectiveness of INDERAL LA as once-daily monotherapy is a big plus. Of the remaining hypertensives in the program, 36% were treated merely with the addition of a diuretic to INDERAL LA.

For the noncompliant patients in your practice, INDERAL LA may well be the answer.

Almost 20,000 of the patients in the nationwide compliance trial were identified as having been noncompliant with their previous antihypertensive therapy. Their physicians reported that 88% showed improved compliance when placed on once-daily INDERAL LA.

Control, comfort, and compliance

ONCE-DAILY
INDERAL® **LA**
LONG ACTING CAPSULES
(PROPRANOLOL HCl)

Like conventional INDERAL Tablets, INDERAL LA should not be used in the presence of congestive heart failure, sinus bradycardia, cardiogenic shock, heart block greater than first degree, and bronchial asthma.

*After a 30-day trial with INDERAL LA, physicians reported that 90% of the patients would remain on INDERAL LA.

The one you know best keeps looking better

NOW AVAILABLE...
NEW LOW DOSE
INDERAL LA 60 mg
LONG ACTING CAPSULES
(PROPRANOLOL HCl)

Please see next page for brief summary of prescribing information

The one you know best keeps looking better

BRIEF SUMMARY *(FOR FULL PRESCRIBING INFORMATION, SEE PACKAGE CIRCULAR.)*

INDERAL® LA brand of propranolol hydrochloride **(Long Acting Capsules)**

DESCRIPTION. INDERAL LA is formulated to provide a sustained release of propranolol hydrochloride. INDERAL LA is available as 60 mg, 80 mg, 120 mg, and 160 mg capsules.

CLINICAL PHARMACOLOGY. INDERAL is a nonselective, beta-adrenergic receptor-blocking agent possessing no other autonomic nervous system activity. It specifically competes with beta-adrenergic receptor-stimulating agents for available receptor sites. When access to beta-receptor sites is blocked by INDERAL, the chronotropic, inotropic, and vasodilator responses to beta-adrenergic stimulation are decreased proportionately.

INDERAL LA Capsules (60, 80, 120, and 160 mg) release propranolol HCl at a controlled and predictable rate. Peak blood levels following dosing with INDERAL LA occur at about 6 hours and the apparent plasma half-life is about 10 hours. When measured at steady state over a 24-hour period, the areas under the propranolol plasma concentration-time curve (AUCs) for the capsules are approximately 60% to 65% of the AUCs for a comparable divided daily dose of INDERAL Tablets. The lower AUCs for the capsules are due to greater hepatic metabolism of propranolol, resulting from the slower rate of absorption of propranolol. Over a twenty-four (24) hour period, blood levels are fairly constant for about twelve (12) hours then decline exponentially.

INDERAL LA should not be considered a simple mg-for-mg substitute for conventional propranolol and the blood levels achieved do not match (are lower than) those of two to four times daily dosing with the same dose. When changing to INDERAL LA from conventional propranolol, a possible need for retitration upwards should be considered especially to maintain effectiveness at the end of the dosing interval. In most clinical settings, however, such as hypertension or angina where there is little correlation between plasma levels and clinical effect, INDERAL LA has been therapeutically equivalent to the same mg dose of conventional INDERAL as assessed by 24-hour effects on blood pressure and on 24-hour exercise responses of heart rate, systolic pressure and rate pressure product. INDERAL LA can provide effective beta blockade for a 24-hour period.

INDICATIONS AND USAGE. Hypertension: INDERAL LA is indicated in the management of hypertension, it may be used alone or used in combination with other antihypertensive agents, particularly a thiazide diuretic. INDERAL LA is not indicated in the management of hypertensive emergencies.

Angina Pectoris Due to Coronary Atherosclerosis: INDERAL LA is indicated for the long-term management of patients with angina pectoris.

Migraine: INDERAL LA is indicated for the prophylaxis of common migraine headache. The efficacy of propranolol in the treatment of a migraine attack that has started has not been established and propranolol is not indicated for such use.

Hypertrophic Subaortic Stenosis: INDERAL LA is useful in the management of hypertrophic subaortic stenosis, especially for treatment of exertional or other stress-induced angina, palpitations, and syncope. INDERAL LA also improves exercise performance. The effectiveness of propranolol hydrochloride in this disease appears to be due to a reduction of the elevated outflow pressure gradient which is exacerbated by beta-receptor stimulation. Clinical improvement may be temporary.

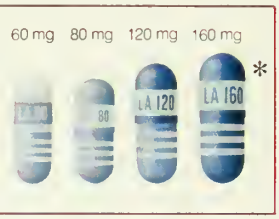
CONTRAINDICATIONS. INDERAL is contraindicated in 1) cardiogenic shock, 2) sinus bradycardia and greater than first-degree block, 3) bronchial asthma, 4) congestive heart failure (see WARNINGS) unless the failure is secondary to a tachyarrhythmia treatable with INDERAL.

ONCE-DAILY

INDERAL® LA

(PROPRANOLOL HCl)

LONG ACTING CAPSULES



WARNINGS. CARDIAC FAILURE. Sympathetic stimulation may be a vital component supporting circulatory function in patients with congestive heart failure, and its inhibition by beta blockade may precipitate more severe failure. Although beta blockers should be avoided in overt congestive heart failure, if necessary, they can be used with close follow-up in patients with a history of failure who are well compensated and are receiving digitalis and diuretics. Beta-adrenergic blocking agents do not abolish the inotropic action of digitalis on heart muscle.

IN PATIENTS WITHOUT A HISTORY OF HEART FAILURE, continued use of beta blockers can, in some cases, lead to cardiac failure. Therefore, at the first sign or symptom of heart failure, the patient should be digitalized and/or treated with diuretics, and the response observed closely, or INDERAL should be discontinued (gradually, if possible).

IN PATIENTS WITH ANGINA PECTORIS, there have been reports of exacerbation of angina and, in some cases, myocardial infarction, following *abrupt* discontinuance of INDERAL therapy. Therefore, when discontinuance of INDERAL is planned, the dosage should be gradually reduced over at least a few weeks, and the patient should be cautioned against interruption or cessation of therapy without the physician's advice. If INDERAL therapy is interrupted and exacerbation of angina occurs, it usually is advisable to reinstitute INDERAL therapy and take other measures appropriate for the management of unstable angina pectoris. Since coronary artery disease may be unrecognized, it may be prudent to follow the above advice in patients considered at risk of having occult atherosclerotic heart disease who are given propranolol for other indications.

Nonallergic Bronchospasm (eg, chronic bronchitis, emphysema) — PATIENTS WITH BRONCHOSPASTIC DISEASES SHOULD IN GENERAL NOT RECEIVE BETA BLOCKERS. INDERAL should be administered with caution since it may block bronchodilation produced by endogenous and exogenous catecholamine stimulation of beta receptors.

MAJOR SURGERY. The necessity or desirability of withdrawal of beta-blocking therapy prior to major surgery is controversial. It should be noted, however, that the impaired ability of the heart to respond to reflex adrenergic stimuli may augment the risks of general anesthesia and surgical procedures.

INDERAL (propranolol HCl), like other beta blockers, is a competitive inhibitor of beta-receptor agonists and its effects can be reversed by administration of such agents, eg, dobutamine or isoproterenol. However, such patients may be subject to protracted severe hypotension. Difficulty in starting and maintaining the heartbeat has also been reported with beta blockers.

DIABETES AND HYPOGLYCEMIA. Beta blockers should be used with caution in diabetic patients if a beta-blocking agent is required. Beta blockers may mask tachycardia occurring with hypoglycemia, but other manifestations such as dizziness and sweating may not be significantly affected. Following insulin-induced hypoglycemia, propranolol may cause a delay in the recovery of blood glucose to normal levels.

THYROTOXICOSIS. Beta blockade may mask certain clinical signs of hyperthyroidism. Therefore, abrupt withdrawal of propranolol may be followed by an exacerbation of symptoms of hyperthyroidism, including thyroid storm. Propranolol may change thyroid function tests, increasing T_4 and reverse T_3, and decreasing T_3.

IN PATIENTS WITH WOLFF-PARKINSON-WHITE SYNDROME, several cases have been reported in which, after propranolol, the tachycardia was replaced by a severe bradycardia requiring a demand pacemaker. In one case, this resulted after an initial dose of 5 mg propranolol.

PRECAUTIONS. GENERAL: Propranolol should be used with caution in patients with impaired hepatic or renal function. INDERAL (propranolol HCl) is not indicated for the treatment of hypertensive emergencies.

Beta-adrenoreceptor blockade can cause reduction of intraocular pressure. Patients should be told that INDERAL may interfere with the glaucoma screening test. Withdrawal may lead to return of increased intraocular pressure.

CLINICAL LABORATORY TESTS. Elevated blood urea levels in patients with severe he disease, elevated serum transaminase, alkaline phosphatase, lactate dehydrogenase.

DRUG INTERACTIONS. Patients receiving catecholamine-depleting drugs such as res pine should be closely observed if INDERAL is administered. The added catecholami blocking action may produce an excessive reduction of resting sympathetic nervous acti which may result in hypotension, marked bradycardia, vertigo, syncopal attacks, or orthost hypotension.

Caution should be exercised when patients receiving a beta blocker are administere calcium-channel-blocking drug, especially intravenous verapamil, for both agents may press myocardial contractility or atrioventricular conduction. On rare occasions, the conco tant intravenous use of a beta blocker and verapamil has resulted in serious adverse reactic especially in patients with severe cardiomyopathy, congestive heart failure or recent myoc dial infarction.

Aluminum hydroxide gel greatly reduces intestinal absorption of propranolol.

Ethanol slows the rate of absorption of propranolol.

Phenytoin, phenobarbitone, and *rifampin* accelerate propranolol clearance.

Chlorpromazine, when used concomitantly with propranolol, results in increased plas levels of both drugs.

Antipyrine and *lidocaine* have reduced clearance when used concomitantly w propranolol.

Thyroxine may result in a lower than expected T_3 concentration when used concomita with propranolol.

Cimetidine decreases the hepatic metabolism of propranolol, delaying elimination a increasing blood levels.

Theophylline clearance is reduced when used concomitantly with propranolol.

CARCINOGENESIS, MUTAGENESIS, IMPAIRMENT OF FERTILITY. Long-term studies animals have been conducted to evaluate toxic effects and carcinogenic potential. In month studies in both rats and mice, employing doses up to 150 mg/kg/day, there was evidence of significant drug-induced toxicity. There were no drug-related tumorigenic effe at any of the dosage levels. Reproductive studies in animals did not show any impairmen fertility that was attributable to the drug.

PREGNANCY. Pregnancy Category C. INDERAL has been shown to be embryotoxic animal studies at doses about 10 times greater than the maximum recommended human do There are no adequate and well-controlled studies in pregnant women. INDERAL should used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

NURSING MOTHERS. INDERAL is excreted in human milk. Caution should be exercis when INDERAL (propranolol HCl) is administered to a nursing woman.

PEDIATRIC USE. Safety and effectiveness in children have not been established.

ADVERSE REACTIONS. Most adverse effects have been mild and transient and have rar required the withdrawal of therapy.

Cardiovascular. Bradycardia, congestive heart failure, intensification of AV block, hypot sion, paresthesia of hands, thrombocytopenic purpura, arterial insufficiency, usually of Raynaud type.

Central Nervous System. Light-headedness, mental depression manifested by insomr lassitude, weakness, fatigue; reversible mental depression progressing to catatonia; vis disturbances, hallucinations, vivid dreams, an acute reversible syndrome characterized disorientation for time and place, short-te memory loss, emotional lability, sligh clouded sensorium, and decreased perf mance on neuropsychometrics. For immedi formulations, fatigue, lethargy and vi dreams appear dose related.

Gastrointestinal. Nausea, vomiting, epig tric distress, abdominal cramping, diarrh constipation, mesenteric arterial thrombos ischemic colitis.

Allergic. Pharyngitis and agranulocytos erythematous rash, fever combined with a ing and sore throat, laryngospasm and respi tory distress.

Respiratory. Bronchospasm.

Hematologic. Agranulocytosis, nonthrombocytopenic purpura, thrombocytopenic purpu

Auto-Immune. In extremely rare instances, systemic lupus erythematosus has be reported.

Miscellaneous. Alopecia, LE-like reactions, psoriasiform rashes, dry eyes, male impoten and Peyronie's disease have been reported rarely. Oculomucocutaneous reactions involvi the skin, serous membranes and conjunctivae reported for a beta blocker (practolol) have been associated with propranolol.

DOSAGE AND ADMINISTRATION. INDERAL LA provides propranolol hydrochloride i sustained-release capsule for administration once daily. If patients are switched from INDER Tablets to INDERAL LA Capsules, care should be taken to assure that the desired therapeu effect is maintained. INDERAL LA should not be considered a simple mg-for-mg substitute INDERAL. INDERAL LA has different kinetics and produces lower blood levels. Retitration m be necessary, especially to maintain effectiveness at the end of the 24-hour dosing interva

HYPERTENSION — *Dosage must be individualized.* The usual initial dosage is 80 r INDERAL LA once daily, whether used alone or added to a diuretic. The dosage may increased to 120 mg once daily or higher until adequate blood-pressure control is achieve The usual maintenance dosage is 120 to 160 mg once daily. In some instances a dosage of 6 mg may be required. The time needed for full hypertensive response to a given dosage variable and may range from a few days to several weeks.

ANGINA PECTORIS — *Dosage must be individualized.* Starting with 80 mg INDERAL L once daily, dosage should be gradually increased at three- to seven-day intervals until optin response is obtained. Although individual patients may respond at any dosage level, t average optimal dosage appears to be 160 mg once daily. In angina pectoris, the value a safety of dosage exceeding 320 mg per day have not been established.

If treatment is to be discontinued, reduce dosage gradually over a period of a few weeks (s WARNINGS).

MIGRAINE — *Dosage must be individualized.* The initial oral dose is 80 mg INDERAL L once daily. The usual effective dose range is 160-240 mg once daily. The dosage may increased gradually to achieve optimal migraine prophylaxis. If a satisfactory response is r obtained within four to six weeks after reaching the maximal dose, INDERAL LA therapy shou be discontinued. It may be advisable to withdraw the drug gradually over a period of seve weeks.

HYPERTROPHIC SUBAORTIC STENOSIS — 80-160 mg INDERAL LA once daily.

PEDIATRIC DOSAGE — At this time the data on the use of the drug in this age group are too limited to permit adequate directions for use.

*The appearance of these capsules is a registered trademark of Ayerst Laboratories.

REFERENCES:

1. INDERAL LA National Compliance Evaluation Program. Data on file, Ayerst Laboratories.
2. Ravid M, Lang R, Jutrin I: The relative antihypertensive potency of propranolol, oxprenol atenolol, and metoprolol given once daily. *Arch Intern Med* 1985; 145:1321-1323.

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To obtain Category 1 credit for this month's article, complete the quiz on page 695.



The Physician's Role in Family Adaptation to Important Life Events

Death, Separation and Divorce, Birth of an Infant with a Handicap, and Critical Illness in a Child

MORRIS GREEN, M.D.
Indianapolis

PART 1

Helping parents and children adapt to major life changes is an important role for the physician. This two-part article will review four such events: death of a parent or child; separation and divorce; the birth of an infant with a handicap; and coping with critical illness in a child. The unifying theme across these stressful events is the actual, perceived or threatened loss of a loved one.

The Pediatrician and the Management of Bereavement

The Death of a Parent

Five percent of children under the age of 15 experience the death of one

NOTE: For ease of presentation, this article is divided into two parts. The CME quiz (page 695) encompasses both parts.

The author will discuss the subject of this paper in a live presentation on the I.U. School of Medicine's Medical Television Network (MTN) from noon to 1 p.m. on Monday, July 27. Please check your MTN calendar.

For information concerning CME accreditation for MTN programs, call the CME office at (317) 274-8353.

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or both parents. Other children mourn the loss of a sibling, a grandparent or a friend. The manifestations of grief in children, which may occur intermittently over a period of years, differ in many respects from those in adults.

Children under the age of three years have no understanding of what death means beyond that of a very traumatic separation experience. Preschool children view death as analogous to sleep. Those between the ages of five and nine years begin to recognize death as irreversible, but not as something that will happen to anyone they know. After the age of nine years, children begin to understand both that death is irreversible and that it could happen to them or their loved ones.

Since children and adolescents tolerate poorly grief and depression, they have a short "sadness span." To avoid being overwhelmed, young children try to deflect the frightening impact of their loss by resuming play, reading comic books, watching television and acting as if nothing upsetting had happened. Some bereaved children give no outward sign of grief. Adolescents, who may show little inclination to talk about their loss, may deny that they are depressed. The child or adolescent's behavior may be misinterpreted as inappropriate or uncaring, especially when a young child repeatedly asks when he will get a new father or mother. It is important, therefore, that the physician explain to the surviving spouse and other caregivers how the manifestations of grief in children differ from those in adults.

Manifestations of Grief in Children

In the young child, the symptoms of grief include regression, sadness, fearfulness, anorexia, failure to thrive, sleep disturbance, social withdrawal, developmental delay, irritability, excessive crying, increased dependency and loss of speech. The preschool child may demonstrate hyperactivity, constipation, encopresis, enuresis, temper tantrums, "out-of-control" behavior, anger, nightmares and crying spells. The school age child's academic performance may decline owing to difficulty in concentration, disinterest, lack of motivation, failure to complete assignments and classroom daydreaming. Other symptoms may include resistance to attending school, crying spells, lying, stealing, nervousness, abdominal pain, headache, listlessness and fatigue. Adolescents may demonstrate depression, somatic complaints, delinquent behavior, promiscuity, suicide attempts and school drop-out.

Care of the Bereaved Child

When a parent dies, the physician needs to help ensure that the needs of the bereaved child are not overlooked. The doctor may express his personal condolences to the surviving parent and offer to be of help to the children. A personal note to each of the children also is meaningful and appreciated.

The child should be told of his parent's death by the surviving spouse or someone else whom the child knows well in a manner attuned to his developmental age. The explanation should be as simple as possible and repeated as needed. It is best not to use the phrase "went to sleep" as the child may then be afraid of going to bed. Since children also may fear that they or the surviving parent may die and that they were somehow responsible for their parent's death, they should be told explicitly that neither the surviving parent nor they are going to die and that the death was not their fault.

Since children worry about food, housing and school, they need to be reassured that their needs will be met. The importance of continuity for the child should be stressed. If possible, familiar surroundings and routines should be maintained so as to promote a sense of constancy. So much has changed: The child's future seems uncertain, the surviving parent is preoccupied, the child's usual schedule is disrupted, and there are many visitors, some of whom are total strangers to the child. If possible, children should be kept in their own homes with one familiar primary caregiver to read, talk to and play with younger children. School age children need someone with whom to share the news of the day, to answer questions repeatedly and, as they are ready, to talk about their feelings.

The child may be confused and anxious about the dramatic changes in the surviving parent. Sad, anxious, disorganized, impatient, angry, irritable and erratic, a grieving parent may simply be unable to cope with the heightened needs of the child. Bereaved parents may be insufficiently aware of their child's need for someone to talk to and for reassurance. Inappropriate "blurring of the generations" may lead, for example, to a mother clinging to the child, expecting her son to be the "man of the house," discussing money and other personal worries with him or over-burdening the child with chores.

While caring for the bereaved child, it is appropriate for the physician to be aware of the parent's emotional status. Since bereaved children are very much affected by the mental health of the surviving parent, continuing symptoms in a child often are linked to the parent's unresolved grief. Problems in bereavement in a parent may be indicated by persistent depression, failure to participate in outside social activities, somatic complaints, increased smoking and abuse of alcohol or drugs. Referral of the parent to a mental health professional may be an important contribution of the physician.

Risk Factors in Children

In children, the long-term outcome cannot be predicted on the basis of the bereaved child's initial response. Such sequelae, which may include an increased predisposition to illness, depression and suicide, may not appear until the adult years. The Institute of Medicine Committee on the Health Conse-

quences of Bereavement identified the following risk factors in bereaved children: parental death under five years of age or in early adolescence; maternal death when a girl is under 11 years of age; the death of a boy's father; a history of emotional problems in the child; an ambivalent relationship with the deceased parent or sibling; excessive parental dependency on the child; absence of a support network; inability of the surviving parent to use that support; multiple caregivers; lack of environmental constancy; a poor relationship with a step-parent; and bereavement due to sudden death, homicide or suicide.

"Red Flags" in Bereaved Children

"Red flags" that suggest the need of bereaved children for mental health help include severe anxiety; fear or hope of dying; persistent depression; suicide gestures or attempts; continued regressive behavior; a verbalized hope for reunion with the deceased; unremitting guilt and self-blame; aggressive and destructive behavior; delinquency; avoidance of talking about the deceased; expression of only positive or negative feelings about the deceased; school underachievement; school avoidance; promiscuity; unwillingness to separate from the surviving parent; failure to demonstrate any manifestation of grief; inability to form new attachments to children or adults; excessive daydreaming; and persistent somatic complaints.

Attending the Funeral

Generally, children who can understand the cause of a sibling's or parent's death are old enough to attend the funeral if they wish. Children should not be forced to do this if they are afraid, reluctant or revolted by the idea. Many children under six years of age are too young while those over nine may be helped by attending, especially if the service is conducted with the child's needs in mind. Preparation prior to the funeral should include being told what the setting will look like and what will happen. It is also a good idea for the child to be accompanied by a relative or close family friend so that he may be accompanied out of the room if he wishes.

Death of a Child

The physician's role in helping bereaved parents begins before and continues after the death of the child through the doctor's thoughtfulness and sincerity, explaining what is happening, answering their questions, demonstrating a high level of competency, regularly spending time with the child and the parents, and conveying empathy for what they are going through. Parents want their child's doctor to demonstrate a personal interest by coming to know their child as a person. The relationship between the physician, the child and the parents constitutes the key ingredient of the help he provides.

Hospitals should facilitate the presence of parents with their seriously ill baby or child. By making the child and the parents as comfortable as possible, the physician and the hospital staff establish themselves as persons who will help them endure the forthcoming loss. Through being with their child and participating as much as possible in his care, parents have the assurance that they did not abandon their child when he needed them the most.

If possible, the child's doctor should be present or come to the hospital or home as soon as possible when a child dies. What the doctor says, his concern and his caring at this time are warmly remembered. Except for a simple "I'm sorry" or "Is there anything that I can do?," listening may be more important than talking. The assurance should be given that everything possible had been done. The physician can answer questions as he is able, but his attentive quietness also implies that the parents can talk or listen when they are ready.

When faced by the death of a child, no words can make the situation all right. The doctor who notes a tendency to feel personally responsible for the parent's unhappiness, as though he were the one who brought it about, needs to be aware of this inclination if he is to be comfortable in helping bereaved parents.

It also is important to prepare the parents for the grief symptoms they will be experiencing, e.g., depression, difficulty in concentration, insomnia, anger, alienation, a feeling of unreality or emptiness, guilt, irritability, anxiety, restlessness, waves of distress, upsetting illusions (feeling the dead baby kicking in their abdomen or hearing him crying), emotional swings, sighing, weakness and anorexia. Unless so prepared, many parents will fear that they are "losing their minds."

Though initially painful, the parents should also be advised to talk about the child with each other and with their other children, friends and families. In the case of the death of a newborn, the parents should be encouraged to name the baby if they had not already done so. The physician also may rehearse how to tell the siblings about the newborn's death in terms that are understandable and useful, e.g., "Johnny was very sick and, although the doctors did everything they could, they were not able to make him well. Mommy and Daddy are very sad that Johnny died. It was no one's fault that Johnny became so sick and died. You are healthy, and you are not going to get sick." Parent support groups and books for bereaved parents may be mentioned.

Sudden Infant Death Syndrome

Sudden infant death has particularly pervasive effects on the parents and siblings. The physician's support at the time of this unexpected and inexplicable loss is a strong therapeutic force. When an infant dies because of the sudden infant death syndrome, the doctor should consider a home visit. If that is not feasible, a phone call or personal note and the offer of a follow-up visit is indicated. Such contacts may

not be easy. In addition to the discomfort of being present at a time of deep sorrow, SIDS frequently makes the doctor worried, though inappropriately, that he had overlooked an abnormality on a previous examination or that the parents would somehow believe that he was at fault. In the return visit a few days after the death, the parents should be given the specific diagnosis of SIDS based on the gross autopsy. They should also be reassured that they were in no way responsible, that the baby did not suffocate and that the death could not have been prevented.

Continuity of Care

The death of a child, a stillbirth or a miscarriage may have long-lasting effects. Because of the lengthy nature of parental bereavement, the advisability of return appointments over a period of several weeks or months is well established. Such visits over time, linked one to another, mobilize the physician-patient relationship as a powerful resource to support the parents' adaptation to this major life crisis. It often is easier for the parents to talk with an understanding and empathetic doctor than to members of their family. That the doctor wants to see the parents after the death of their baby or child offers proof that he is sensitive to their feelings.

In these later sessions, the doctor can review the autopsy findings and discuss further the parents' questions about the cause of death. Immediately after the death of a child, parents are in no position to ask all the questions that may be on their minds or to hear much of the doctor's explanation. Return visits also provide the physician an opportunity to monitor the parents' adaptation and to intervene early if the bereavement process is not progressing appropriately.

The Physician and the Children of Divorce

Separation and divorce rank right along with death of a parent at the top of any list of stressful childhood and adolescent life events. Most of the one to one-and-a-quarter million children affected annually are very young since the average duration of marriage is now around six years. There is a 45% chance that a child today will experience a parental divorce before he graduates from high school. Eighty percent of divorced men and 75% of women remarry. As 40% of remarriages end in divorce, one of seven children will be exposed to this stress more than once.

Impact of Divorce on Children

Most children recover from this major family crisis in two and one-half to three years, especially if the divorce terminates an intolerable marital situation; however, other children and adolescents experience more lasting developmental, cognitive, social, somatic and behavioral sequelae.

The reaction of a child to divorce has many similarities to bereavement after the death of a parent in that the changes and the losses are unexpected, abrupt, threatening and beyond the child's personal control.

Almost always, there is an immediate fall in the standard of living. Because of work and other added responsibilities, the mother has little free time to spend with her children. Except in joint custody, fathers visit only occasionally or may never be seen or heard from again. Especially during the first year, when a child needs their continuing support and understanding the most, the parents are insufficiently available either physically or psychologically. If there is a move, other key elements of a child's social support system, such as friends and a familiar school, are also lost.

The break-up of a family is always emotionally unsettling. For a child, divorce is not a passing storm but an overhanging black cloud that follows him through the months or years of marital discord, multiple separations, the sudden departure of the father, the vicissitudes of a single parent family, exposure to continued parental conflict and relitigation, the dating and remarriage of the parents, the adjustment to step-parent(s), step-siblings and step-grandparents, the guilt of divided loyalties and the indignity of being used as a pawn in the parents' continuing war.

The impact of divorce on children depends upon their age and gender; their previous psychologic status; the support available to them; the degree of continuing parental bitterness and conflict; custody, visiting arrangements and contact with the non-custodial parent; the emotional stability of the parents, especially the custodial parent; the current parent-child relationship; the number of siblings; and the family's economic status.

Clinical Manifestations in Children

Infants and toddlers may demonstrate developmental regression in feeding and toilet training, separation problems, disordered sleep, irritability, anorexia and increased oppositional behavior. Preschool children may show such aggressive behaviors as hitting or biting other children, temper tantrums, thumb sucking, eating problems, hyperactivity, frequent night terrors and withholding of stools. They fear being unwanted, unloved and replaced or abandoned.

Symptoms in young school children include hyperactivity, a pervasive sadness, grieving, school underachievement, resistance to school attendance, urinary frequency, enuresis and encopresis. Children in this age group worry about their parents' smoking, drinking and driving.

Older school children and adolescents may feel depressed, lonely, devalued, rejected, hurt, anxious and ashamed. Arguments about and resistance to paying support reinforce the mother's repeated assertion that the father does not care for the child. Further reinforcement is added when the father does not keep his promises, is late or does not show to pick the child up for visits, fails to remember birth-

days, does not attend activities in which the child is a participant and ignores the child when with his girlfriend. Adolescents are troubled by their parents' dating, live-in boy or girlfriend and overt sexuality.

Temper tantrums, shouting and demanding behavior reflect the intense anger that many children feel toward one or both of their parents. Wallerstein stated it well: "Children and adolescents do not believe in no-fault divorce." Some mothers come to perceive, at least in their minds, that their son is developing the same behavioral characteristics and tendencies that she so intensely disliked in his father. On his part, the boy may unwittingly fulfill his mother's prophesy: "You're getting to be just like your father!"

The mother may entrap the child into an alliance that encourages derogation and exclusion of the father. Many children are exploited as messengers between the warring parents or as spies who are regularly interrogated about the other parent's activities, especially dating. Some parents compete for the child's loyalty and "love" through over-permissiveness and expensive gifts.

Somatic complaints such as recurrent abdominal pain or headache, an exacerbation of asthma or non-compliance with diabetic management may lead to medical consultation. Antisocial behaviors may include lying, petty theft, delinquency, substance abuse, poor peer relations, aggression toward a parent, running away and sexual acting-out. Adolescents worry that the family's lessened financial resources may preclude their attending college or having a car. Others wonder whether they are also destined to have a failed marriage. Boys demonstrate a more lasting psychologic disequilibrium than do girls. This difference may possibly be attributable to the absence of the father from the home. Hetherington has reported that, as adolescents or young adults, girls whose parents divorced early in their lives have a lower self-esteem, are more likely to be sexually active and to run away from home.

TABLE 1
Children's Response to Divorce

Developmental regression in young children.
Separation fears.
Behavioral symptoms, e.g., aggression, stool withholding, hyperactivity, acting out, antisocial behavior, depression.
Fear of being replaced or abandoned.
Difficulty understanding what is going on.
Decrease in school performance. School resistance.
Intense anger.
Somatic complaints, abdominal pain, headache.
Belief that they were responsible for causing the separation and divorce.
Hope for a reconciliation of the parents.
Discomfort with parent's sexuality.
Worry about their future.

The Role of the Physician with the Child

Though divorce is commonplace today, children feel ashamed and uncomfortable in talking about it. Many are on the brink of tears when the subject is broached. They have some familiarity with the process because so many of their friends and relatives have experienced a divorce, but they lack the cognitive ability to understand its meaning until they are nine to ten years of age or older.

The interview provides the opportunity to convey the doctor's emphathetic understanding of what the child is going through. With his authoritative and trusted physician, the child can safely share his troublesome feelings, ask questions, clarify what is going on, be helped to control his behavior and validate his personal worth.

Many young children egocentrically and secretly believe that the parents' divorce was their fault. Others retain the forlorn hope that a reconciliation is possible, even when the parents have remarried. Although the marriage had been an unhappy one and the father unattentive or even abusive, children seem to nurture the idealized nostalgia that things were better and more secure before the divorce. Persistence of a wish to turn the calendar back suggests that much "grief work" remains to be to done.

On the other hand, children who no longer feel responsible for the divorce, who have accepted the "verdict of reality" that the parents' separation is final, who feel able to ask questions freely, who distance themselves from parental conflicts and who have a personal support network have largely mastered their disruptive experience and are ready to move forward.

The Role of the Physician with the Parents

Parents who are aware that the adaptation of children to divorce is an issue that deserves professional guidance may schedule a separate or joint appointment for themselves without the child before or early in the separation. Although such consultations are not yet a common practice, prospective discussion of the feelings, needs and responses of children experiencing separation and divorce (*Table 1*) coupled with advice about useful protective measures (*Table 2*) offers an invaluable service to a very large group of vulnerable children.

Most divorced parents do not understand or think sufficiently about the impact of divorce on children. Some rationalize that the child is "too young

TABLE 2
Protective Measures

Prepare child for the separation and divorce.
Emphasize that the divorce is entirely the parents' decision.
Explain the reasons for the divorce and that it was not the child's fault.
Repeated explanations will be necessary.
Mention, if true, that every effort was made to preserve the marriage.
Point out that the parents' decision is irreversible.
Be open to the child's inevitable questions.
Reassure the child that his needs will be met.
Explain where he will live and go to school, where the other parent will stay, and when they will see each other.
Try to avoid moving the child.
Avoid using the child as a pawn, messenger or spy.
Do not force the child to take sides.
Remember birthdays and holidays.
Attend special activities in which the child is a participant.
Keep promises.
Respect generational boundaries.
Maintain discipline. Develop skills in conflict resolution.
Reassure the child that both parents love and (if true) will continue a close relationship with the child.
If the father is to be no longer involved, arrange for a relative or friend to act as a father substitute.
Try to spend individual time with each child.

to understand" or that "he has adjusted well" because "he doesn't ask any questions." Only infrequently do parents have insight into the association between the divorce and the clinical manifestations for which the child is being seen by the physician.

The reasons for the separation should be shared with the children who are old enough to understand without recitation of any lurid details (most children are aware of what has been going on) or gratuitous derogation of the other parent. Along with a direct statement that the divorce was solely the parents' decision, that their decision is irreversible and that the child was in no way responsible, the assurance should be given, if true, that every effort was made to preserve the marriage. The explanation for the separation might simply be that the parents had finally and regretfully decided that they just could no longer live together.

Although the *spousal* relationship is terminated by divorce, the continued importance of *parental* relationships to the child needs emphasis along with the statement that children, especially boys, do best when the non-custodial parent maintains a close and helpful relationship. If the parents have not yet separated, the need to prepare the children should be explained. The doctor can offer his understanding that most parents find such disclosure very difficult. Although it may be best for the parents to prepare the children jointly, this may not be feasible.

Joint custody, now enacted in legislation in 32 states, seeks to provide a workable arrangement through which cooperative parents may share equally in child care responsibilities, decisions and living arrangements. To be successful, joint custody requires that the parents be able to remain objective about the needs of the child, value a close relationship of the child with both the mother and the father, understand the child's and the other parent's point of view and abstain from projecting blame.

A climate needs to be nurtured in which the child feels free to ask questions over the subsequent months and years. Repeated explanations by the parents may be necessary. It also may be pointed out that a child who "has no questions" about one of the most important events in their lives may be receiving a nonverbal signal not to ask questions or may be afraid of making the parents upset or angry by such questions.

A child's immediate questions may be previewed for the parents: Where will I live? Will I have to go to a new school? When will I see my father? Why are my parents doing this? Children, therefore, need to be told explicitly that their needs will continue to be met, where they will live, where they will attend school, where the non-custodial parent will live and when they will see him again. To limit the number of disruptive changes, the parents should avoid moving the child when possible.

Several caveats may be included, although they may be honored more in the breach than in practice. These include urging the parents to avoid using the child as a pawn in their conflicts, forgetting birthdays, being late or neglecting to pick the child up for expected visits, failing to keep other promises, neglecting discipline and derogating the other parent.

Impact of Divorce on the Parents

In addition to their lowered self-esteem, divorced parents may be lonely, guilty, angry and worried about their future. Their feelings of failure and incompetence may be compounded by their child's reproachful anger. During this moratorium for parenting, the depressed and preoccupied parents are immobilized in their ability to be understanding and supportive. Unaware of the child's feelings, they may strikingly misinterpret his behavior. Additional problems may arise if the mother, usually the

custodial parent, has to live with her parents. In addition to being regressive for her and confusing to the child, the move dilutes the mother's authority, reawakens intergenerational tensions and forfeits privacy.

In a breach of generational boundaries, the parent may inappropriately use the child for companionship and as a confidant with whom to share financial and other personal worries, including questions about dating and remarriage. To serve as the "man of the house," to be the reluctant bearer of charged messages between warring parents and to be asked to serve as a disloyal spy may cause overwhelming anxiety. If the father is no longer available to the child, the physician might suggest that the mother try to arrange for a male relative or friend to serve as a model for the boy.

When There is a Problem

Because marital discord and divorce are so commonplace, the physician needs to include the possibility of an impending divorce as an etiologic factor when seeing children with behavioral or other problems as described above. Even though dissolution of their marriage is actually about to occur, the parents may dissemble and report that "Everything is fine!" Especially suggestive is the unsolicited protestation that "We have a wonderful marriage, Doctor!"

When the reason why a child of divorced parents has been brought to see the doctor is not clear, especially if the accompanying parent or grandparent casually suggests that the complaint is caused in some way by living with or visiting the other parent, a custody dispute is likely in progress. The undisclosed intent of the visit may be to maneuver the physician into agreeing with them. Even an off-hand remark, especially when based on only one side of the story, may lead to a call or letter from an attorney that opens with the statement: "I understand that when you saw Johnny Smith yesterday, you agreed with my client that for reasons of health, further visits of Johnny to his father and new stepmother are inadvisable." Before answering questions or giving an opinion about custody or other controversial matters, it is, of course, always wise to explore how the parent who asks the question feels about the issue and to decline to answer unless fully informed. Mediation of custody disputes is not a medical role.

When the parent is experiencing personal problems in adaptation, referral may be made to a social agency, a mental health professional, a woman's group, a self-help organization for single, divorced parents (such as Parents Without Partners) or to books now available for divorced parents and children of divorce.

Remarriage and Step-Parents

Parental dating and remarriage may be resented by the child, particularly if the close relationship developed between a single mother and her daughter is threatened. Preadolescent and early adolescent girls particularly experience remarriage of their parents as upsetting. On the other hand, remarriage of the mother may turn out to be constructive for boys.

Prospective step-parents can often benefit from preparation for their new role. Those who have not been a parent previously may profit from parenting classes or reading some of the books written as guides for step-parents. Step-parents can expect that an older child will find it difficult to call them "Dad" or "Mom," especially if there is a continuing relationship with their biological father or mother. They can also anticipate that older children and adolescents will reject expressions of affection, no matter how sincere. The step-parent should be advised to work first on acceptance and building a relationship rather than become too quickly involved in discipline and setting new rules. Establishing such a friendship usually requires from 18 to 24 months and considerable patience.

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PART 2

The Physician and the Family of Child With a Handicap

When a baby is born with a handicap, the unexpected replaces the expected. The growing mutuality between infant and mother, which had been developing prenatally, seems suddenly extinguished. The air in the delivery room is heavy with silence; the ambience is one of sadness and disappointment. Having anticipated a normal baby, the new parents feel cheated, faulted, deprived and very much alone. There are few times when the support of a caring physician is more needed, sophisticated competence more appropriate or the opportunity for the formation of a close bond between parents and doctor more available.

Depending on the characteristics of the malformation, the parents' expectation of what their baby would be like, that is, a normal infant, is lost or modified strikingly. Not only is the baby different from what might have been, but the parents, and almost everything else, seem no longer the

way they were.

The reconstructive and healing process through which a new and positive identity is formed can be facilitated by examination of the baby in front of both parents while emphasizing what is normal; describing the infant's personality and temperament to help the parents think of their baby as a person rather than as a handicap, i.e., "a cleft palate" or "a spina bifida"; referring to the baby by name; cuddling, talking to and smiling at the baby; understanding and kindness by the nursery staff; encouraging the parents to discuss the baby with nurses, siblings, friends and relatives; rehearsing with the parents how this might be best done; and using illustrations to make discussions as concrete as possible.

The success with which parents cope depends on many factors, including a supportive marital relationship; relatives and friends who understand and are ready to help; the ability of the parents to articulate their needs; the degree of their communication with each other; their capacity to see their baby as a whole person rather than to fixate only on the handicap; a healthy older sibling in the family; and, in some cases, the chance to talk with parents who have mastered a similar experience.

The parents should be seen together by the physician as promptly as possible after birth. This initial meeting should be private, unhurried and with both the physician and the parents sitting down. In addition to providing information about both the diagnosis and prognosis, the doctor serves as an empathetic listener to whom the parents can express their most personal feelings. While parents may share feelings, i.e., "Why us?," they also react as individuals, "Why me?" After discharge of the infant from the hospital, communication between the parents and the physician needs to be continued with relatively frequent appointments including, if possible, a home visit. If such a visit is not feasible, the baby and the parents should be seen in the office within 10 days to two weeks.

The initial phase of management in the hospital makes but a limited contribution if not followed by frequent, scheduled visits during the early years. The parents should not be asked to call for an appointment but given one; otherwise, they may not take the initiative. A long-term handicap is never interpreted adequately in one visit but over many sessions attuned to the parents' readiness to know. Time and regularly scheduled visits are needed to clarify the problem and to help the parents adapt. The mother and the father may not do so simultaneously, and a few never relinquish their denial of the infant's problem.

Return visits also help the physician assess the parents' adaptation in terms of the realism of their perceptions, the appropriateness of their expectations, their concern with current rather than distant problems, their ability to meet their infant's needs, the degree of their preoccupation with what might have been, the pertinence of their questions, their ability to utilize advice, the quality of their relationships with the child and with each other, their decreasing need to utilize denial, and their readiness to report such distressing feelings as anxiety, sadness, guilt and anger.

The continuing care of a child with a handicap is based on the following 10 principles.

1. In view of the current expectation of parents and of persons with handicaps for increased autonomy, self-help and personal sufficiency, full parental participation must be the rule. Habilitation and rehabilitation programs today must provide the parent, and later the child, an active rather than only a passive role.

2. Competent, conscientious biomedical care is the preeminent requirement for the optimal psychologic management of children with handicaps.

3. Continuing care, principally by one primary care physician with consultants utilized as needed, permits the doctor to be psychologically as well as physically available. A trusting patient-physician relationship can usually evolve only over time. The chance to ask questions, express concerns and share anxieties with an authoritative, empathetic physician who listens, understands and has the parents' confidence is of great psychotherapeutic value.

4. Secondary maladaptive problems may follow the birth of an infant with a handicap. Otherwise resourceful and competent parents may feel inadequate and uncertain as to what to do. Their misunderstanding or lack of information may be great. Child-rearing practices may be distorted because of parental depression, anxiety, ambivalence, inability to cope, and an undue preoccupation with the child's handicap. Social isolation and lack of family communication may be striking.

5. Recognizing that the eventual goal is for the child to be a socially competent adult, the physician needs to monitor the adaptation of the whole child, i.e., growth and development, physical health, nutrition, immunization status, psychosocial adjustment, maturation, school progress and vocational plans. Although most children cope with and accept the reality of their handicap, as many as 30% develop secondary emotional problems. When coping patterns, the parent-child relationship and social experiences are positive, children with handicaps do well.

Many handicapping conditions affect the integrity of the child's body, e.g., physical weakness or growth retardation change his body image. Besides potentially or actually compromising his independence and ability to compete, the handicap may cause the child to be excluded from such usual peer activities as athletics. Adolescents worry about being different from their friends or from those they yearn for as friends. A child with mental retardation, cystic fibrosis or cerebral palsy may suddenly one day recognize fully that he has a problem that he will not "outgrow."

He may then either be engulfed by feelings of inadequacy, shame and a sense of losing out, or resolve even more strongly to succeed.

Seeing his patient frequently over months or years, the physician who treats a child with a long-term handicap or illness comes to know him well. Superb clinical care, always highly personal, derives from the kind of thoughtful experiences that help the doctor acquire a sensitivity and responsiveness to the needs of children. Contributing greatly to a child's comfort and security, the physician's attentiveness is demonstrated by the kind and thoughtful way in which he talks to and examines the child; the remembrance of birthdays, Christmas and other happy times; talking about things of interest to the child; alertness to an appearance of sadness ("You seem kind of discouraged today."), discomfort or fear of death (or of life); an occasional phone call; appropriate praise and compliments; talking to him alone as well as to his parents; an open invitation to call between visits; patience in understanding why he may be uncooperative; avoidance of criticism, threats or exhortation; and acceptance of the negative feelings the child may from time to time feel comfortable enough to express. All of this is important whether or not the physician's interest seems valued or noticed.

6. Children, especially those with a long-term handicap or illness, need to be carefully prepared even for minor changes. The child's trust that his doctor will always try to tell him what is going to happen fosters his perception of the physician as truthful, predictable and safe.

7. A relationship that facilitates openness is essential. While some questions are asked immediately, those that engender the most anxiety ("Will I grow up?" "Will I be cured?" "Will I die?") can be communicated only in the freedom of a secure and close physician-patient relationship.

8. Close collaboration and communication with other physicians, allied health professionals and community agencies is essential.

9. The physician should help the family recognize and build on their child's strengths and potentialities rather than concentrate only on his problems and deficits.

10. Once the diagnosis, treatment and prognosis of a birth defect have been explained, the physician should maintain as optimistic and encouraging an outlook as is realistic. The actively interested, seasoned physician who nurtures hope without false promises has a way of evoking the kinds of strengths and resources that foster the optimal adaptation of patients and families.

Critical Illness and the Vulnerable Child Syndrome

A critical illness is psychologically as well as physically hazardous. Once a child has recovered from a serious illness, most parents make a healthy adaptation and rear the child very much as they would if he had not been so ill; however, following a serious illness during which she believed her child would not survive, an occasional mother demonstrates a maladaptive outcome termed the "vulnerable child syndrome." The manifestations of this syndrome reflect her continued fear that this specific child will be highly vulnerable to serious illness or accident and is destined to die prematurely.

Marked separation difficulty is a prominent clinical feature of the vulnerable child syndrome. When separation is unavoidable, the child may reluctantly be entrusted to a close relative, such as the grandmother, but other baby sitters are not used. Sleep problems are frequent, and the mother may come to the physician in a state of near emotional and physical exhaustion. The child often sleeps in the parents' bed or in a crib placed next to the mother and in her direct line of vision. Although she may report that the baby does not sleep well, it is the mother who awakens several times a night to check on the child.

In many cases, the parent is unable to set disciplinary limits with the result that the child is disobedient, argumentative and uncooperative. He may hit, bite, scratch or kick the mother, and she seems powerless to stop such abuse. That this striking lack of discipline is present only with the mother contributes further to her sense of frustration.

Excessive concern about the child's health and over-use of medical services for minor respiratory infections, fever, diarrhea, limb pains and abdominal pain or headache are highly characteristic. The mother worries inordinately about the child's "paleness," "sickly appearance," "fatigue," "circles under his eyes," "blueness" when crying, "breathing too fast" and "poor resistance." Her inability to differentiate a self-limited illness from one that is potentially serious drives her to bring the child frequently to physicians and emergency rooms so as not to be seen "too late."

Parents are usually unaware of the relationship between the child's current symptoms and their illogical fear of the child's premature death based on his past serious illness. The genesis of this syndrome becomes clear only in answer to such questions as, "You seem very worried about Mark. Could you be a little more specific about that worry?" "Has Mark ever been seriously ill?" "How sick was he then?" "Was he seriously ill?" "What did the doctor tell you during Mark's illness?" "Did you feel from what the doctor or the nurses told you or from what you sensed that you might lose him?."

Once the syndrome is recognized, the first step in management is the physician's unreserved assurance, following a thorough history and conspiculously meticulous physical examination, that the child is absolutely physically sound. The next is to help the parent understand and accept that the symptoms are an undesirable but common sequela of an acute, life-threatening illness. If the parent is able to accept the physician's conclusion

that her child is physically healthy and to understand the causal relationship between present behavior and past experience, the vulnerable child syndrome can be managed in only one visit.

In terms of prevention of this syndrome, the physician must convey the diagnosis, treatment and prognosis of an ill child without either over- or understatement. An occasional physician, however, has the professional liability of overestimating for the parents the seriousness of a child's illness. Once recovery has occurred, no constructive purpose is served in reminding the parents about how critically ill the child had been.

The physician's debriefing of the parents just before discharge should include, if true, the unequivocable statement that the child is or will shortly be fully recovered, that he is not destined in the future to be more vulnerable to illness and that special precautions are unnecessary. The physician may also point out that after a child's recovery from an illness, concerned parents may have a natural tendency to be overprotective and overindulgent, a response that becomes disadvantageous if continued.

What's Wrong with Me, Doctor?

Guest Editorial

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How many times have I been asked the question by a person—man, woman, child, grandmother, grandfather, widow, divorcee, alcoholic, executive, factory worker, student, minister. I've heard all of their symptoms, their ideas as to what might be wrong—what their Aunt May suggested, what they read in the newspaper or saw on TV last week—but the last thing they all say is, "What's wrong with me, Doctor?" In spite of four years of under graduate training, four years of medical school and one year of internship, two years experience in an Eskimo village, and 16 years of a busy private practice, as often as not, I will have to be honest with myself and my patient and admit that "I don't know."

For many of my practice years the recognition that "I don't know" was a bitter pill for me to swallow. I would rather expound upon my knowledge and give a long, complicated differential diagnosis as from a medical textbook, to impress my patient with my vast knowledge: I would rather say anything than dare to admit "I don't know" to someone who has come to get a "magic" answer to his question.

But recently I have discovered that, in the majority of people who ask me that question, I really *do* know what is the matter. I discovered by using my eyes, listening to the way patients tell me their problems, noticing how they sit in their chair, noticing if they establish eye contact with me, seeing and sensing if I can perceive what they are feeling—rather than focusing on the wide array of confusing symptoms they may tell me—that I can come to a reasonable assessment of what is wrong with them. For what I have discovered is that the overwhelming majority of patients who come to me to find out what's the matter with them are suffering from a disease process I simply call aphilia. It is a disease all of us are born with, which, unless treated, is progressive through life. It leads to further complications of a myriad of documented medical problems such as peptic ulcer disease, hypertension, colitis, cancer, depression, alcoholism, drug abuse, suicide. You name it, it may very well be a complication of aphilia. In layman's terms the disease process I am referring to is called *I am not lovable* or *I am without love*.

The human species cannot live without love. It is well documented that, without physical attention and love, infants will actually die from love deprivation. The not so widely understood corollary of this is that, in spite of how we were born into this world, none of us really knows or can accept that we are lovable, just the way we are. To prove to ourselves that we are lovable is the basis for unhappiness, pain and sickness in the world as we experience it. We "cope" as best we can to keep ourselves safe, but we are dealing with forces beyond our control. The more we control to be safe, the more we find that we cannot control, and the more anxiety we generate. If we could only believe that we are lovable from the beginning, my hunch is that the offices of all the doctors across the country would be grossly deserted.

So now when a person comes in and tells me of his chest pain, or stomach pain, or headache, at least I have a basic starting point of what might be the underlying etiology of his complaint. Although I know the disease process, it is not one for which I can prescribe an easy cure. The cure, unfortunately, cannot be given by me. But with understanding, and by being receptive, accepting and loving, perhaps the patient will be able to come to his own answer for his question, "What's Wrong with Me?" I pray it may be so.

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ADULT CRITICAL CARE MEDICINE

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TEMPORARY CARDIAC pacing may be a life-saving procedure in the critically ill patient who developes a compromising bradycardia. Common causes of bradydysrhythmias in the critical care unit include primary heart disease, drug toxicity, metabolic and electrolyte disturbances and complications of procedures such as right heart catheterization or cardioversion.

While certain high risk populations are easily identified,[1] in others bradycardia or asystole may occur with little warning. Patients with new ventricular conduction disturbances in the setting of acute myocardial infarctions are at high risk of developing progressive heart block and may thus benefit from placement of a "prophylactic" temporary transvenous pacing catheter. However, placement of transvenous pacing catheters may require resources and expertise not immediately available in many institutions, especially in the emergency setting of sudden unexpected bradycardia or asystole.

The limitations of transvenous pacing catheter insertion in the setting of cardiac arrest have been well demonstrated.[2,3] In these studies pacemaker insertion was attempted late in the course of resuscitation, after the failure of conventional advanced cardiac life support measures (ACLS). This occurred at a point when myocardial hypoxia and acidosis would be expected to preclude successful capture and excitation-contraction coupling. Mortality in the setting of asystole was uniform. While some of the delay in pacemaker insertion was related to appropriate prioritization of ACLS, the time required for vascular access and difficulty in achieving appropriate catheter location in the absense of interpretable intracavitary EKG signals or fluoroscopy further limited the efficiency of this technique.

In the acute setting pacing techniques that may be applied quickly by personnel with limited experience obviously offer significant advantages. The available techniques include transthoracic, esophageal, and external pacing.

Transthoracic pacing utilizes a flexible j-shaped pacing electrode inserted into the ventricular cavity through a stylette that has been placed through the chest wall by direct subzyphoid puncture. Despite extensive experience with this method, there are few reports of long-term survival resulting from its use in bradyasystolic cardiac arrest.[4] While successful use of transthoracic pacing in bradycardia and heart block has been reported, the potential complications, which include pericardial tamponade, pneumothorax, coronary artery puncture, and liver injury,[5] should preclude its use outside of a cardiac arrest situation if any alternative is available.

Esophageal pacing utilizes a flexible electrode inserted into the esophagus via the oro or naso-pharynx and advanced to the level of the heart. The pacing impulse is then applied. Successful atrial capture is easily achieved, though ventricular capture may be less reliable.[6] This is most likely related to anatomical factors. While there are

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anecdotal reports of successful resuscitation from asystole with this technique,[7] experience is limited. However, esophageal pacing is relatively free of complications, is tolerated by awake patients, and may be initiated by personnel with limited experience.

External pacing was initially developed three decades ago, but the limited technology of the time was unable to resolve the problems of skin and skeletal muscle stimulation and difficulty of monitoring cardiac response and capture. Utilization of larger electrodes with better conductive material, modifications of the pacing stimulus and improvement in monitoring techniques have allowed the development of a new generation of external pacemakers that can successfully pace and capture in the demand mode with far less patient discomfort.

pacing are its noninvasive nature and the rapidity and ease of its initiation by personnel with limited expertise. The technique has met with limited success in the setting of bradyasystolic cardiac arrest,[8] but in most of these studies application of the device has occurred only after failure of initial ACLS measures. A more recent study has indicated that early initiation of external pacing may be associated with better outcome.[9]

The efficacy of external pacing outside of the cardiac arrest setting is well established. Successful capture has been routinely achieved in the normal volunteers, patients with cardiac disease without hemodynamic compromise, and patients with compromising bradydysrrhythmias.[10] In general, the procedure has been well tolerated though the higher output (78 milliamps vs. 51 milliamps) required in hemodynamically compromised patients may be associated with more cutaneous and muscular stimulation.

The capacity for external pacing may have one of its major benefits by reducing the need for prophylactic transvenous pacing.[11] Transvenous pacing has been reported to have an overall complication rate from 0-22%. Patient populations in whom the incidence of life-threatening bradycardias is low but definable may be better served by expectant management than by prophylactic pacing.

The availability of an effective noninvasive pacing technique that can be quickly implemented by nursing personnel greatly increases the safety of expectant management in these patients. Such populations may include patients with left bundle branch block undergoing right heart catheterization, patients with sick sinus syndrome undergoing cardioversion for atrial arrhythmias, patients with myocardial infarction and lower risk ventricular or nodal conduction disturbances, and patients with bi or trifasicular block undergoing general anesthesia. External pacing may be used as a temporizing measure while resources and personnel are mobilized for transvenous pacemaker insertion.

In patients with sudden and unexpected bradycardia secondary to metabolic changes such as hypoxia or acidosis, it is unlikely that even an effective pacing technique will improve outcome if the underlying disorder is not reversed. However, rapid utilization of external pacing to maintain cardiac rhythm and systemic oxygen delivery may prevent further deterioration while definitive therapy is initiated.

In summary, external cardiac pacing offers advantages over other pacing techniques in the acute setting. It can be rapidly and safely initiated by personnel with limited expertise in the setting of bradyasystolic cardiac arrest or sudden unexpected compromising bradycardia. Its availability increased the safety of expectant management of patient populations known to be at risk of complete heart block or sinus arrest, and it is an effective temporizing measure while preparing for transvenous pacing catheter insertion.

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PAIN AND DISABILITY

WAYNE O. EVANS, Ph.D.
Indianapolis

65 Million Americans Suffer from Chronic Pain; of These, 50 Million Are Partially or Totally Disabled. A Leading Cause of Disability for People of All Ages Is Impairment of the Back and Spine . . .

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AT PRESENT there is an epidemic of pain in the United States. Furthermore, there is evidence that this epidemic is growing.

The *Table* shows the extent of recurrent or persistent pain as reported in the Nuprin Pain Report.[1] As can be seen, 27% of the U.S. population suffers pain of one type or another for 101 or more days per year. The Nuprin Pain Study also showed that 18% of those who rated their pain severe or unbearable did not consult any professional because they did not think anyone could help their pain. Further, pain is the cause that is most responsible for new visits to a physician.[2]

Low back pain alone is responsible for 19 million doctor visits per year, and there are approximately 200,000 spinal surgeries performed for back pain each year in the United States.[3] Raj presents information that suggests that if one looks carefully at large numbers of patients who have been operated on, 50% freedom of pain is a fairly accurate measure of overall success.[4]

The problem seems to be growing. Russek reported that, in 1955, 12.4% of industrial injuries and 16% of consequent compensation payments in the state of New York were for back injuries.[5] Osterloh noted that 37.8% of all workmen's compensation cases in 1970 in California were secondary to back injuries.[3] More recently, it has been estimated that 50% of all compensation payments to disabled workers and their medical providers is for back pain.[3]

Annually, about 400,000 accidental injuries lead to partial or permanent disability.[6] Approximately 65 million individuals in the United States suffer from chronic pain, and of these, 50 million are partially or totally disabled.[4] In the United States in 1971, approximately 8 million people had some impairment of back or spine.

Impairment is defined as a permanent defect or chronic condition causing decrease or loss of function to perform various functions.[7] This represented almost 3.9% of the entire population. In 1974, nationwide, a National Institutes of Health household survey showed that impairment of back and spine was the third leading cause of limitation of activity in severe disability of all ages. For individuals under 45 years of age, impairment of the back and spine was the leading cause of limitation of activity or severe disability.[8] Again, the problem seems to be on the rise as the National Institutes of Health household survey found a 50% increase in "displaced intervertebral disk" between 1969 and 1976.[9]

These numbers demonstrate that pain is becoming an increasing source of disability and impairment in the U.S. population.

There is a major economic cost associated with this pain. If one assumes a median U.S. income of $23,000 per annum and 230 workdays per year, then society lost $55 billion in productivity in 1984 as a direct result of pain on full-time employees.[1] If one includes loss of productivity, payment of compensation and health care costs, it is now estimated the United States spends $70 billion a year on pain.[10]

In a study of the Norton Company, which is representative of heavy industry, over 100 cases of low back pain are seen each year out of an employee population of approximately 5,000. The estimated direct and indirect cost of low back pain in this company amounted to $250,000 per year. With 24,000 workers worldwide, the company spends close to $1 million a year

on low back pain alone.[4] The Liberty Mutual Company, which is the leading writer for workmen's compensation insurance, pays over $2 million annually for back injury claims.[11] For American industries, the cost of low back pain is higher than the cost of all other injuries combined.[12]

Physical impairment must be distinguished from disability. "Physical impairment is an anatomical or pathological abnormality leading to loss of normal body abilities, while disability is diminished capacity for everyday activities or limitation of the patient's performance compared with a fit person of the same age and sex. Thus, physical impairment is objective structural limitation whereas disability is the resulting loss of function usually subjectively reported. Objective physical impairment and subjective disability can be used together and compared and contrasted."[13]

It is the difference between physical impairment and disability that is a source of continuing confusion for the physician when he or she must give a legally acceptable rating of total body impairment. Waddell and Main studied this problem by comparing diagnoses with legally accepted total body impairment ratings.[13] The major physical impairments such as decrease in lumbar flexion, straight leg raising, root compression signs, etc., were compared with disabilities of functional activities such as heavy lifting, sitting, standing, sleep disturbance, sex drive, and others. They found that after conservative treatment, there was little relationship between the clinical signs and the degree of physical impairment. Further, they found that physical impairment only affected approximately 50% of the variability in the indices of disability.

In other studies, in a series of 415 head injury cases, a disproportionate number of cases with only minor physical symptoms claimed compensation compared with those who suffered significant impairments, suggesting that psychological, as opposed to physical factors, were more prominent in that particular group.[14] Physical injury may be of less relevance than the distress produced by damage to vital parts of the body which are invested with symbolic significance.

TABLE
Pain in the United States

TYPE OF PAIN	HAD PAIN 101 OR MORE DAYS (%)	LOSS OF WORK-DAYS PROJECTED TO U.S. POPULATION OF ALL ADULTS (IN MILLIONS)
Headache	5	637.9
Backache	9	1307.8
Muscle Pains	5	617.3
Joint Pains	10	961.3
Stomach Pains	3	394.1
Dental Pain	1	70.3

In another study by Dolce, *et al*, an attempt was made to determine variables that would predict return to work status six to 12 months post treatment.[16] They found that the clinical indices of objective damage did not predict the work status at six to 12 months. However, pre-treatment pain levels, the degree of concern shown by the patient for his condition and the hysteria scale of the Minnesota Multiphasic Personality Inventory (MMPI) did predict work status a year post-treatment.

Again, Waddell, *et al*, studied a group of patients aged 20 to 55 years old with at least a three-month history of low back pain.[17] They separately performed physical and psychological assessments on the patients. They found that the objective physical impairment accounted for approximately one-half of the total disability, the other half being predicted by psychological factors.

Also, Wiltse[18] and Beals[19] have noted that psychological factors may enforce disability despite otherwise seemingly clear diagnosis and appropriate treatment by objective criteria. They found that patients who had scores greater than two standard deviations above the mean on the MMPI failed to achieve pain relief despite excellent technical chemonucleosis or disk excision surgery in the face of unequivical mylographic and operative findings.

Besides the psychological findings as predictors of disability, other studies have indicated that if the patient is off work for six or more months, there is only a 35 to 55% chance he will return successfully to the work force. For individuals who are off for one year or more, only 10 to 25% return to work, and for patients who are off two years or more, only 2 to 3% eventually return to the work force.[20]

Because of the importance of psychological and psychosocial events in the prediction of disability, some physicians believe that malingering is a major problem. However, Braverman, in the study of malingering post injury, found that malingering was present in only seven of 2,500 injured workers.[21] The present author's experience with over 2,000 chronic pain patients would also suggest that malingering is very rare (malingering being defined as the conscious faking of symptoms in order to gain reward).

Another factor which has been speculated upon by some authors is the concept of "compensation neurosis." This is thought to refer to a condition

in which compensation causes the presence and maintenance of distress. In a recent review of literature in this field by Weighill,[22] he suggests there is no such thing as "compensation neurosis." The view is generally held that if the potential reward maintains complaints, then they should recede after settlement has been paid. However, studies by a number of authors have found that in only a few cases did a settlement lead to a reduction of complaints.[22] Further, others found that the presence or absence of compensation is not a criterion that can predict outcome of treatment by comprehensive pain centers.[23]

On the basis of these studies, it seems reasonable to conclude that psychological and psychosocial factors are a major determinant of disability as compared to physical impairment but that the psychological factors are not operating on a conscious basis.

Considering the importance of psychological factors, it becomes apparent that a simple, organ-based approach to pain and disability is not likely to be universally succesful. In relation to this, the National Institutes of Health published a consensus development conference statement called "The Integrated Approach to Management of Pain."[24] This paper represents the combined wisdom of a number of very well known health professionals. They recognized that pain is an important and complex phenomenon. It must be treated with an integrated approach, which combines appropriate physiological, pharmacological, psychological and social interventions. They further recognize that an assessment from all of these different viewpoints must be made if the pain is going to be adequately treated. They point to the development of specialized pain centers which use multiple modes of treatment and employ the skills of a multidisciplinary team.[25] This is now defined as the integrated approach to the management of pain. More particularly, attention to the psychosocial and psychological factors can reduce the likelihood that physical impairment will lead to disability.[26] Also, the studies mentioned before show that the sooner a patient is referred to a comprehensive pain management program, the greater the chance of successful rehabilitation. If a physician delays the referral, he or she is doing a disservice to the patient.

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Pseudomembranous colitis has been reported with virtually all broad spectrum antibiotics (including macrolides, semisynthetic penicillins, an cephalosporins); therefore, it is important to consider its diagnosis in patients who develop diarrhea in association with the use of antibiotics Such colitis may range in severity from mild to life threatening

Treatment with broad-spectrum antibiotics alters the normal flora of t colon and may permit overgrowth of clostridia Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of antibioti associated colitis.

Mild cases of pseudomembranous colitis usually respond to drug dis continuance alone In moderate to severe cases, management should include sigmoidoscopy, appropriate bacteriologic studies, and fluid, ele trolyte, and protein supplementation When the colitis does not improve after the drug has been discontinued, or when it is severe, oral vancomy is the drug of choice for antibiotic-associated pseudomembranous colit produced by *C difficile.* Other causes of colitis should be ruled out

Usage in Pregnancy—Safety of this product for use during pregnanc has not been established

Precautions: *General*—Patients should be followed carefully so that a side effects or unusual manifestations of drug idiosyncrasy may be dete If an allergic reaction to Keflet occurs, the drug should be discontinued the patient treated with the usual agents (eg, epinephrine or other press amines, antihistamines, or corticosteroids)

Prolonged use of Keflet may result in the overgrowth of nonsusceptic organisms Careful observation of the patient is essential If superinfecti occurs during therapy, appropriate measures should be taken.

Positive direct Coombs' tests have been reported during treatment w the cephalosporin antibiotics. In hematologic studies or in transfusion cross-matching procedures when antiglobulin tests are performed on th minor side or in Coombs' testing of newborns whose mothers have received cephalosporin antibiotics before parturition, it should be recog nized that a positive Coombs' test may be due to the drug.

Keflet should be administered with caution in the presence of marke impaired renal function Under such conditions, careful clinical observat and laboratory studies should be made because safe dosage may be lo than that usually recommended.

Indicated surgical procedures should be performed in conjunction w antibiotic therapy

As a result of administration of Keflet, a false-positive reaction for glu cose in the urine may occur This has been observed with Benedict's an Fehling's solutions and also with Clinitest® tablets but not with Tes-Tape (Glucose Enzymatic Test Strip, USP, Lilly).

Broad-spectrum antibiotics should be prescribed with caution in indi uals with a history of gastrointestinal disease, particularly colitis.

Usage in Pregnancy—Pregnancy Category B—The daily oral admini tion of cephalexin to rats in doses of 250 or 500 mg/kg prior to and duri pregnancy, or to rats and mice during the period of organogenesis only, had adverse effect on fertility, fetal viability, fetal weight, or litter size Note that safety of cephalexin during pregnancy in humans has not been establishe

Cephalexin showed no enhanced toxicity in weanling and newborn ra as compared with adult animals Nevertheless, because the studies in humans cannot rule out the possibility of harm, Keflet should be used du pregnancy only if clearly needed.

Nursing Mothers— The excretion of cephalexin in the milk increased u 4 hours after a 500-mg dose, the drug reached a maximum level of 4 μg/ then decreased gradually, and had disappeared 8 hours after administra Caution should be exercised when Keflet is administered to a nursing wor

Adverse Reactions: *Gastrointestinal*—Symptoms of pseudomembran ous colitis may appear either during or after antibiotic treatment. Nause and vomiting have been reported rarely The most frequent side effect ha been diarrhea. It was very rarely severe enough to warrant cessation of therapy Dyspepsia and abdominal pain have also occurred. As with son penicillins and some other cephalosporins, transient hepatitis and chole tatic jaundice have been reported rarely

Hypersensitivity— Allergic reactions in the form of rash, urticaria, an edema, and, rarely, erythema multiforme, Stevens-Johnson Syndrome, toxic epidermal necrolysis have been observed. These reactions usually sided upon discontinuation of the drug Anaphylaxis has also been repo

Other reactions have included genital and anal pruritus, genital monili vaginitis and vaginal discharge, dizziness, fatigue, and headache Eosinc philia, neutropenia, thrombocytopenia, and slight elevations in SGOT an SGPT have been reported.

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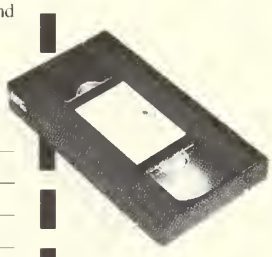
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Can Bone Scans Detect Ureteral Obstruction Due to Carcinoma of the Prostate?

A. H. HORAN, M.D.[1]
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B. FARRINGER, M.D.[3]
J. M. SEDDON, M.D.[4]

Abstract

Prostatic carcinoma patients are commonly followed with serial IVPs to detect early ureteral obstruction and bone scans to detect bony metastases worthy of radiation therapy. By contrast, we evaluated the feasibility of using bone scans for the detection of ureteral obstruction by looking for ureteral images on 75 bone scans with nearly simultaneous IVPs. The specificity of a positive ureteral image was 100%. The sensitivity was 76%, i.e., we detected 10 of 13 obstructed ureters with bone scans alone. The three false-negatives were caused by poor intrinsic renal function. Thus, the study concludes that if the renal image is well seen, serial bone scans give sufficient warning of ureteral obstruction to allow the omission of follow-up intravenous pyelograms and prophylactic orchiectomy and/or radiotherapy until retention of isotope in the ureter proves need.

BECAUSE THE incidence of ureteral obstruction is 10% in patients with active carcinoma of the prostate,[1] intravenous pyelograms (IVP), in addition to bone scans, are customarily ordered at yearly intervals to detect early ureteral obstruction lest the patient's quality of life be impaired by sepsis or uremia. Because 33% of ^{99m} Tc-methylene diphosphonate (^{99m} Tc-MDP)[2] is excreted by the kidneys and because functioning renal parenchyma is commonly seen on radionuclide bone scans, it would seem possible to satisfy the purposes of the two modalities by critical assessment of the bone scan alone. However, the reliability of the bone scan is in doubt when its interpretation is stretched beyond the design limitations of the isotope to include ureteral imaging. This report seeks, in the spirit of technology assessment, to diminish that doubt.

Materials and Methods

Imaging was performed after intravenous injection of 25 mCi of sodium pertechetate, medronate disodium. The images were obtained by a scintillation camera (Ohio-Nuclear 438 single pass). The instrument has a 3/8″ crystal detector requiring separate anterior and posterior views. There was a three-hour interval between injection of the isotope and imaging. The patients were asked to void just prior to imaging. The scan speed was 18-22 cm/minute, which was calculated from the information density 30cm(x10.). Information density was taken off the sternum.

The population was drawn from an unselected, consecutive series of recent patients carrying the discharge diagnosis of adenocarcinoma of the prostate (CAP). Retrospectively, ^{99m}TC-MDP bone scans of 75 CAP patients with 132 kidneys were examined by various combinations of a graduate faculty urologist, a family practice resident, and a general surgery resident. Notation was made of the presence or absence of ureteral images (our sole criterion for ureteral obstruction). IVPs done within six months of the bone scan were then examined to confirm or deny the impression written down about the bone scan. If an IVP had not been done within six months, that patient's bone scan was excluded from the study. Approximately 75 additional patients were excluded for this reason.

Results

As seen in the *Table*, 136 renal units showed no ureteral image and, in 133 of them, correctly so. Ten ureteral images appeared on bone scans. The IVPs confirmed all of them, making specificity of the bone scans 100%. Three obstructed ureters were missed on the bone scan and later identified on the IVP, which made the sensitivity of the bone scans 76%. These occurred when both ureters were obstructed. In each patient, the opposite ureter was correctly identified as obstructed on the bone scan. The coincident IVPs showed that the reason for the error was destruction of renal parenchyma sufficient to yield the functional equivalent of intrinsic renal disease. Thus, the renal image was not well delineated on the bone scan.

Two patients failed to show a renal image due to complete absorption of the isotope by extensive bony metastases.

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Discussion

This study differs from the most relevant previous studies[3-5] in size, (75 scans paired with 75 IVPs), mode of selection of the population, and in the criteria used to define obstruction with bone scans (see *Table*).

The perfect sensitivity of 100% reported here was achieved by looking solely for the ureteral image and avoiding the temptation to draw conclusions from renal, pelvic, and calyceal collections of isotope. The exclusive focus on the renal pelvis and calyces of Balachandran, *et al.*[3] explains the high sensitivity as well as the high rate of false-positive they reported.

Furthermore, by choosing ultrasound as their confirmatory modality, they lost the opportunity to make a statement about ureteral obstruction, the crux in carcinoma of the prostate. Their sensitivity of 100% was achieved by a sacrifice of specificity (41%), again because of a willingness to call calyceal collections hydronephrosis.

A difference in criteria also explains the lack of sensitivity (60%) and specificity (64%) reported by Pollen, *et al.*[5] They did not note that if the renal image is missing, i.e., the equivalent of intrinsic renal disease, no statement is justified about obstruction of the ureters. Thus, four of their six false-negatives were patients with bilateral obstruction, as were two of our three false-negatives. This source of error declined during our study as observers gained experience.

Pollen, in response to the high false-negative rate of his earlier report, described an "extended" bone scan.[4] "Extended" means scanning of the kidneys immediately after the radioisotope injection, in addition to the standard delayed scan. The purpose was to "reduce the number of routine urograms required and thus yield a saving in cost and convenience to the patient."[4]

Our study confirms their conclusion and certainly does not contradict their proposed immediate scanning. There is indeed an advantage in avoiding the falsely negative renal image caused by a "super bone scan,"[2,7-8] since the isotope is used to image the kidney before possible absorption by extensive osseous metastases. However, in contrast to Pollen, *et al*, this study also supports the usefulness of the simpler, delayed scan because we would exclude all patients with a poor renal image from the strenuous interpretation of the bone scan proposed here.

Considerations of cost and institutional inertia might preclude routine immediate scanning. If the clinician keeps in mind the causes of an absent renal image namely, *intrinsic renal*

TABLE

	1983 Pollen, et al[5]	1985 Balachandran, et al[3]	1986 Horan, et al
# bone scans reviewed	220	55	75
# kidneys	439	98	146
# obstructed ureters diagnosed by bone scans	14	29	10
# obstructed ureters documented by IVP or ultrasound	15	12	13
# of false-positive bone scans	5	17	0
sensitivity of bone scans	60%	100%	76%
specificity of bone scan	64%	41%	100%
criteria for diagnosing obstruction with bone scan.	"both increased uptake in the pelvis and calyces, including dilatation of the collecting system or dilatation of the ureter"	"increased radiotracer retention in the kidney or its collecting system"	ureteral image seen on bone scan
Conclusions	Bone scan is an unreliable test for ureteral obstruction. Unilateral is more likely to be detected than bilateral.	Bone scan is a reliable screening test for hydronephrosis but positive bone scans should be verified by IVP or ultrasound	Bone scan is a reliable screening test for ureteral obstruction if the renal image is well seen

False-negatives: nonvisualized kidney obstructed -2
visualized kidney obstructed--1

disease absorption of the isotope by extensive metastases, renal osteodystrophy[2] *or Paget's disease,*[3] he may state confidently that an absent ureter means no obstruction and conversely, that a ureter seen is a ureter obstructed.

As a corollary, this study supports the statement that, after an initial IVP to exclude congential lesions, and after exclusion by the attending physician of the four conditions above, IVPs need not be repeated at intervals in patients with carcinoma of the prostate who are receiving regular bone scans.

The cost savings possible via this technology assessment of bone scanning are substantial as clinician anxieties about missing a slow obstruction of the ureter are diminished.

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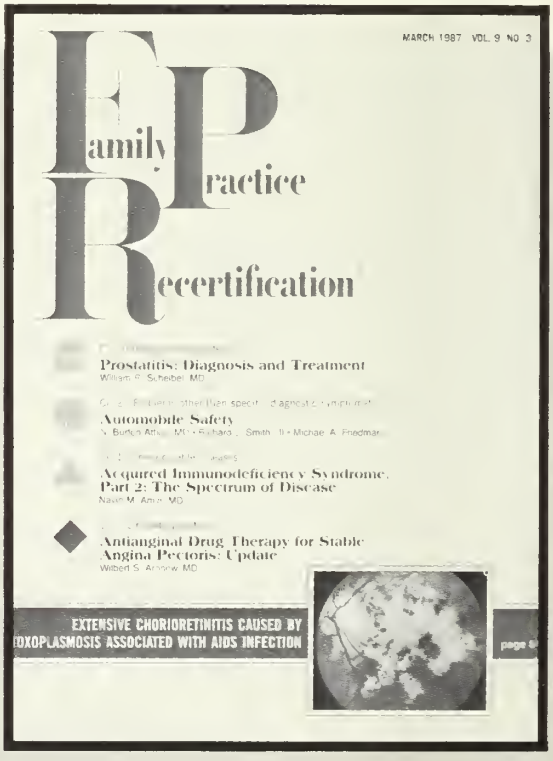
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Narcolepsy: An Update for 1987

MARVIN E. VOLLMER, M.D.
Indianapolis

Preserve me from unseasonable and immoderate sleep.

—Alexander Pope
Prayers and Meditations

In Patients under 40 Narcolepsy Is the Single Most Common Disorder of Excessive Somnolence. Such Patients Are at High Risk for Accidents and School or Job Failure . . .

Dr. Vollmer is an accredited clinical polysomnographer and is Director, Sleep/Wake Disorders Center, Community Hospitals, Indianapolis.

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In 1880, Gelineau described a 38-year-old wine barrel retailer with a striking syndrome of sudden sleep attacks and episodic muscle weakness that he named "narcolepsy."[1] Once thought to be quite rare, narcolepsy is now known to be one of the more common disorders of excessive somnolence with a prevalence of about 1-2/1000.[2] In fact, 25% of all somnolent patients presenting to a Sleep/Wake Disorder Center prove to have narcolepsy.[3] In patients under 40, narcolepsy is the single most common disorder of excessive somnolence.[4]

The unrelenting somnolence characteristic of narcolepsy puts these patients at high risk for accidents and school or job failure. Over one-third of patients with narcolepsy report automobile or work-related accidents. Almost one-half report job dismissals, or early retirement due to their hypersomnolence. Fortunately, advances in diagnosis and treatment now allow the physician to detect and treat narcolepsy at an earlier stage, before the development of irreparable somnolence-induced school and job failure or disabling accidents.

The current definition of narcolepsy is a "syndrome consisting of excessive sleepiness and abnormal manifestations of rapid eye movement (REM) sleep. The latter include frequent sleep-onset REM periods, which may be subjectively interpreted as hypnagogic hallucinations and the disassociated REM sleep inhibitory processes: cataplexy and sleep paralysis."[5]

Excessive waketime somnolence is the hallmark of narcolepsy, occurring as the initial symptom in 96% of cases. The age at onset varies from 5-63, but the vast majority of patients with narcolepsy first experience hypersomnolence before age 40, usually in the teens or twenties. Discrete sleep attacks aggravate the chronic drowsiness. These sleep attacks are brief (30 seconds to 20 minutes), refreshing and frequently associated with dreaming, in contrast to the prolonged unrefreshing and dreamless daytime naps of the sleep apneic patient.

Sleep attacks most often occur in boring situations but can also occur during activities such as conversation, driving or even sexual intercourse. The frequency varies from one to dozens per day. Since the severity of hypersomnolence and sleep attacks is increased by sleep disruption or loss, many narcoleptic patients first note the onset of troublesome somnolence after starting shift work, or experiencing some other abrupt change in their sleep/wake schedules. Unlike the other symptoms of narcolepsy, spontaneous resolution of the hypersomnolence is quite rare.[6]

Memory loss, blackouts and episodes of automatic behavior occur in about half of patients with narcolepsy.[9] These symptoms are closely related to hypersomnolence, which results in an impairment of information transfer from immediate to longer term memory. As a result, narcoleptic and other hypersomnolent patients may adequately perform tasks requiring mainly immediate memory (e.g., driving, assembly line work, some conversations) without later recollection of the event. The blackouts and memory loss may sometimes mimic a seizure disorder or dementing illness. It is important to note that these disturbing memory malfunctions are reversible with correction of the hypersomnolence.

Cataplexy, the most common associated symptom, is characterized by a sudden decrease or loss of muscle tone, typically precipitated by laughter or anger. This decrease in muscle tone can be generalized, but is more often

limited to the masseters or the quadriceps. Even with total abolition of muscle strength, the cataplectic patient retains consciousness as well as diaphragmatic and eye movement. These attacks usually last less than one minute and may be accompanied by vivid visual and/or auditory hallucinations.

Cataplectic attacks eventually occur in up to 70% of all narcoleptic patients, usually beginning within five years after onset of hypersomnolence with a median age of onset of 28 years. Unlike the hypersomnolence of narcolepsy, cataplectic attacks will spontaneously remit in about 16% of cases after an average duration of 10-20 years.

Hypnagogic hallucinations and sleep paralysis are minor symptoms of narcolepsy and often coexist. Vivid dream-like hallucinations occurring during a (transiently) paralyzed wakefulness are often sufficiently impressive to the narcoleptic patient to result in the initial physician visit, but rarely actually precede the onset of hypersomnolence. Isolated sleep paralysis can also occur in up to 5% of normal people without narcolepsy, often familially. Like cataplexy, sleep paralysis and hypnagogic hallucinations are manifestations of an inappropriate intrusion of REM-sleep phenomenon into wakefulness, tend to appear several years after the onset of somnolence and remit spontaneously in many cases after a duration of 10-20 years.

Patients with narcolepsy and the other disorders of excessive somnolence tend to present to medical attention after a somnolence-related accident, school or job problem. The clinical diagnosis of narcolepsy is secure in the hypersomnolent patient with cataplexy, sleep paralysis and hypnagogic hallucinations, but this classical tetrad occurs in only 10% of patients with narcolepsy.

Furthermore, these associated symptoms usually do not appear until several years after the onset of the somnolence and may never occur in up to 30% of all narcoleptics. Therefore, narcolepsy must be considered in any patient complaining of chronic excessive somnolence, even in the absence of associated symptoms. Once the initial evaluation has excluded obvious causes such as inadequate sleep, brain tumor, drug abuse, etc., sleep/wake laboratory testing is usually indicated to establish a definite diagnosis.

TABLE
Diagnosis of Narcolepsy Using the Multiple Sleep Latency Test[7]

	1 SOREMP	2 or more SOREMP	Mean Sleep Latency Less than 5 minutes
Sensitivity	98%	84%	57%
Specificity	94%	99%	94%

The Multiple Sleep Latency Test (MSLT) is the current diagnostic procedure of choice for narcolepsy. The MSLT consists of four to five daytime nap opportunities spaced at two-hour intervals beginning at 9-10 a.m. monitored with standard electroencephalographic techniques. For each nap, the time to actual sleep onset is precisely measured (sleep latency), and the presence of rapid eye movement (REM) sleep determined. Normally, the average sleep latency is greater than 10 minutes, and REM sleep is not present during any of the daytime naps.

Narcoleptics and patients with other disorders of excessive somnolence tend to have sleep latencies much less than 10 minutes. In addition, the presence of REM sleep (Sleep onset REM period or SOREMP) during one or more of these daytime naps is highly suggestive of narcolepsy. Since significant obstructive sleep apnea can also occasionally cause sleep onset REM periods, an overnight polysomnogram is usually done the night prior to the MSLT. This allows precise measurement of the quality of this preceding night's sleep as well as the exclusion of the obstructive sleep apnea syndrome.

The MSLT is both highly sensitive and specific for narcolepsy (*see Table*). Since narcolepsy is a chronic affliction usually requiring treatment with abusable medications, the diagnosis should not be made without confirmation by qualified sleep/wake testing.

Treatment of the narcoleptic patient's hypersomnolence should be multifaceted. It is not widely appreciated that narcoleptic patients often have as much difficulty maintaining sustained sleep as they do maintaining sustained wakefulness. Since disruption of sleep markedly exacerbates the narcoleptic's daytime sleepiness, careful attention should be given to sleep hygiene measures, and correction of any organic factors disrupting sleep. Narcoleptic patients have a higher than normal incidence of sleep-fragmenting conditions such as sleep myoclonus and sleep apnea. If present, these associated sleep disorders also should be treated appropriately. Shift work (particularly the night shift) should be completely avoided.

Drugs used to treat hypersomnolence include pemoline (Cylert), methylphenidate (Ritalin) and dextroamphetamine (Dexedrine). Pemoline is the best tolerated due to its long duration of action, and also seems to have the lowest abuse potential. The alerting effect may not be evident for 3-4 weeks after starting the medication. In contrast, Dexedrine is least well tolerated and has the greatest addictive potential, possibly due to its much shorter half life.

Since all stimulant medication has the potential of fragmenting sleep and further exacerbating the narcoleptic's

somnolence, special care should be taken not to administer any of these medications within 6-8 hours of bedtime. Gammahydroxybutyrate is a nonstimulant amino acid that appears to be effective in treating narcoleptic hypersomnolence by an unknown mechanism. This drug seems promising in some Canadian studies, but unfortunately is not available yet in the United States.

REM sleep-suppressing drugs are used to treat cataplexy, sleep paralysis and hypnogogic hallucinations. These include protriptyline (Vivactyl), imipramine (Tofranil) and gammahydroxybutyrate.

The cause of narcolepsy is not yet known. Although the classical narcolepsy syndrome has been noted to be precipitated by head trauma, anoxic-ischemic brain damage, and diencephalic tumors, the vast majority of cases are "idiopathic" and probably involve a strong genetic predisposition combined with an unknown triggering event. First degree relatives of narcoleptic patients have a 60 fold increased prevalence of narcolepsy.

Recently, there has been a remarkable discovery of a link between the Human Leukocyte Antigen (HLA), DR2 and narcolepsy. 99-100% of narcoleptics studied so far from Asia, Europe, and the United States have proven to be HLA-DR2 positive.[8] This linkage of narcolepsy with a specific major histocompatability complex antigen is the strongest disease-antigen linkage of any so far discovered. This unexpected finding underscores the previously known genetic basis for narcolepsy, but also suggests a possible autoimmune basis for narcolepsy.

Summary

With the development of improved diagnostic techniques has come the discovery that narcolepsy is one of the more common sleep disorders causing excessive daytime somnolence. Most patients with narcolepsy can lead normal lives with judicious pharmacologic therapy combined with measures to improve the quality of nighttime sleep. Recent genetic studies from Asia, Europe and North America indicate an unexpected possible autoimmune basis for narcolepsy. These and other recent discoveries concerning clinical features, diagnosis, etiology and treatment of narcolepsy are briefly reviewed for the practicing clinician.

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Alzheimer's Disease: Providing Care for the Family

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The Real Burden of Caring for the Alzheimer's Patient Lies with the Family, But Home Care Can Be Very Stressful. Here's a Look at What the I.U. School of Medicine Is Doing to Help.

THE TREATMENT AND care of the elderly suffering from Alzheimer's disease represents a major challenge to our health care system. However, contrary to popular belief, the burden of care most often lies with the patients' families. Studies have consistently shown that the abandonment of elderly parents by their children in time of need is very rare, regardless of the nature of the illness.[1-6] Haley[7] points out that the vast majority of impaired elderly receive the bulk of their economic and social support and personal care from family members. In fact, the family is the largest health care delivery system in existence.

This tendency toward family responsibility is supported by the fact that only a small percentage of those aged over 65 are found in institutions. The majority of those who are institutionalized elderly are widowed, childless, and/or require extensive nursing care.[8] It is generally accepted that home care is beneficial to the patient.[9] However, home care of a demented relative can be very stressful to the family members, becoming detrimental to their own health and well-being.[10] Caregiving can lead to emotional exhaustion, depression and physical illness.[11,12]

The Diagnostic Process

The determination of the presence of Alzheimer's disease is not as yet an exact science. Ultimately, the diagnosis is clinicopathological, requiring the demonstration in life of the presence of dementia and the finding of typical pathological features, such as neurofibrillary tangles and neuritic plaques in the brain at post-mortem examination. Diagnostic difficulties include the separation of dementia, particularly mild dementia, from non-dementing conditions that can affect intellectual function and the distinction between Alzheimer's disease and the many other illnesses subsumed under the syndrome of dementia.

There have now been a few studies that have attempted to validate clinical diagnosis by subsequent post-mortem evaluation.[13,14,15] All studies demonstrate the diagnostic difficulties but they differ in their assessment of the extent of the problem. Rather encouragingly, it appears as if a more organized approach to data gathering and establishment of criteria such as those proposed by Roth, *et al.*,[16] provides better sensitivity and specificity for clinical diagnosis as determined by subsequent post-mortem evaluation.[14] It is hoped that the new brain imaging techniques such as MRI (Magnetic Resonance Imaging), cerebral perfusion using Single Photon Emission Tomography (SPECT), and Positron Emission Tomography (PET) will assist considerably in the diagnostic process although it is still a little early to assess their effectiveness. It is also possible that the new genetic discoveries in familial Alzheimer's disease will lead to the development of blood tests which will greatly facilitate diagnosis.[17] Certainly with the possible development of new pharmacological methods of treating Alzheimer's patients, at least symptomatically, the importance of accurate diagnosis of the disease as early as possible is emphasized. As will be discussed later, the uncertainty of diagnosis and prognosis is a major stress factor for families.

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Course of the Illness and Family Response

Although Alzheimer's disease follows an inevitable progressive course leading to death, within 5 to 10 years, usually from bronchopneumonia, the rate and severity of the decline varies considerably from person to person and often fluctuates considerably from time to time in the same individual. Several authors have described the clinical course of the disease.[18,19-21]

Mild Dementia. The early symptoms of Alzheimer's disease may last for years. Because the onset is insidious, it may be difficult to pinpoint. Memory loss for recent events is often the earliest and most pronounced symptom. Other symptoms may include disorientation to time, diminished drive or apathy. Elderly persons may be aware of the changes and try to hide them or to compensate for them. As a result, depression is common at this time. The changes in memory and behavior may be so subtle that families do not recognize there is anything wrong. As the disease progresses, Alzheimer's sufferers experience increasing difficulty in performing complex intellectual tasks. Hence, they begin to perform poorly at work—if they are not retired—and may lose their job. Families then may face reduced income as well as the emotional trauma of job loss and inevitably have to come to grips with the realization that something is seriously wrong with their loved one. Because the early symptoms are so subtle, and the disease progresses slowly, it is easy for families to deny that something is wrong.

Moderate Dementia. This phase usually lasts several years and is characterized by progressive memory loss, and disorders of language, for example, naming objects and understanding instructions. It is usually during this stage that the diagnosis of Alzheimer's disease is finally made. Sometimes families do not accept the diagnosis or may go from one medical center to another looking for a definitive cure. While early denial lessens the emotional impact of the diagnosis, continued denial is counterproductive. It may foster unrealistic expectations about the patient's capabilities, and promote anger between the patient and the health care team. Denial also interferes with appropriate planning for the future, especially legal and financial issues, which need to be attended to early on before the patient becomes totally incompetent. To some families, on the other hand, the diagnosis may come as relief knowing that the patient is not "crazy" or willfully lazy. Despite the increase in public awareness about Alzheimer's disease, many families may not be fully aware of the meaning of the diagnosis and its implications.

Due to the lack of adequate treatment, physicians may communicate a sense of hopelessness once they have made the diagnosis. Most physicians are not equipped to provide for both the medical and psychosocial needs of the patient and family and, since no one has been assigned the role of providing psychosocial intervention, the family is often left in "limbo."

Problems with orientation may progress to the point that the person not only loses track of time and place but does not remember names of his or her spouse or children. Mood may become labile, and attention to dress and hygiene decreases. Sometimes the patient's sleeping patterns change drastically so that they sleep during the day and wander at night. Occasional urinary and fecal incontinence may also occur. Wandering becomes a serious problem. New experiences are often accompanied by confusion and suspiciousness, and later by stubborn refusal or striking out. Catastrophic reactions occur as a result of the patient's frustration with stimulus overload. Frightening episodes of belligerent and impulsive behavior create much anxiety for families. While physical abuse is uncommon, many wives have reported fear of being harmed by their husband. When catastrophic reactions such as these are present, they are ranked as the most serious of all problems by family members.

Obviously, the constant care and supervision the patient needs demands a herculean effort on the part of the caregiver. Gwyther and Matteson[18] describe this phase as a time of loss and grief for family members—loss of the patient as the individual he once was and grief over the change in family life. As Lezak notes:

"The spouse cannot mourn decently. Although he has lost his mate as surely and permanently as if by death, since the familiar body remains, society neither recognizes the spouse's grief nor provides the support and comfort that surrounds those bereaved by death." (p. 593).[22]

Families may also experience guilt because they believe that they should have recognized the disease earlier or because they became impatient and angry with the patient. In many cases families must bear their guilt, loss and grief alone because they have become so isolated that there is no one with whom to share their feelings. Family feelings of isolation can stem from several sources. In the initial stage of the disease, isolation is often self-imposed by the patient and/or family due to embarrassment about the behavioral problems. As time goes by, friends visit less and less and the family soon becomes totally isolated socially. Rabins, *et al.* found that over 50% of their sample of caregivers of patients diagnosed with irreversible dementia reported giving up friends, hobbies, or jobs or had little time to themselves, contributing to feelings of loss and social isolation.[23] The family must also bear emotional separation from the patient. The patient can no longer supply the affection and empathy needed to sustain a healthy relationship.

As the severity of the disease pro-

gresses, the ill person's behavior can not only create some concern and embarrassment, but requires a shift in role assignments. Family members must assume more and more responsibility for the physical care, safety and personal affairs of the ill person. In addition to caregiving activities, men, for example, may need to learn to cook and clean while women may have to assume responsibility for the family's financial affairs. This switch can be a source of considerable distress for all family members, including the patient. These role changes often lead to family conflicts including differing expectations of how things should be handled, jealousy, resentment, or direct disapproval of caregiving approaches. The mental and physical health of family members, particularly spousal caregivers, are at the greatest risk during this phase of the disease. Depressive symptoms are reported by the majority of family caregivers. Rabins, *et al.* found that 87% of their sample reported feeling depressed, sad, angry or tired most of the time.[23] Patients' level of impairment in activities of daily living, social functioning, and disruptive behavior exacerbates these symptoms.[12]

Severe Dementia. Typically, this phase is relatively short. The victim's personality and total identity are lost. Some patients may not eat and become emaciated while others develop a type of hyperorality and morbid hunger. They cannot communicate verbally, are usually incontinent, and may suffer seizures. Most patients become bedfast and lose all motor and speaking ability. It is at this time that families must face the decision of whether or not to institutionalize the patient because of the need for 24-hour total care and supervision. This decision is often faced with much guilt and conflict among family members who often do not possess the financial resources required for institutional care. In the terminal stage, families may also have to face ethical issues such as the use of extraordinary life-support measures.

Family Support

In light of the many problems facing families of demented patients, most authorities emphasize the necessity of providing information about the disease, guidance about handling the cognitive and behavioral changes in the patient, and social support, particularly the support provided by groups. Several studies of family caregivers have reported that the greatest decrease in their level of stress followed group therapy sessions or participation in support group meetings in which they were given information about the disease.[24-28] Gwyther and Matteson[18] have recommended that all family members seek help from a support group and that health care professionals provide a "superstructure" for the caregiver throughout the course of the illness as caregiving demands increase and the need to seek institutional care becomes a factor. Certainly, follow-up appointments by physicians for these patients and their families would alleviate greatly the feelings of abandonment.

What is Being Done?

A multi-disciplinary Alzheimer's and Related Diseases Clinic is being established at Indiana University School of Medicine to provide not only comprehensive diagnostic assessment but also ongoing follow-up and supportive services for both patients and their families. Faculty from the Departments of Psychiatry, Neurology, Radiology, and Medical Genetics will cooperate in the initial diagnostic evaluation and continued medical supervision. In addition to the traditional clinical and laboratory testing, the initial assessment includes the newer brain imaging techniques including MRI and SPECT when indicated.

An important part of the program will be a comprehensive assessment of the family. The family will be evaluated along several dimensions including an estimate of their cumulative stress and the adequacy of the social support system. Families rarely have the luxury of coping with one stressor at a time. Family members may have other troublesome health problems, financial difficulties, marital or other family relationship conflicts or a host of other problems which can add an additional burden to that of coping with long-term chronic illness. In addition, the families' coping styles, their degree of adaptation and their perceptions and attributes to caregiving will be ascertained.

Faculty members in the School of Nursing will provide specialized services for the family. Nurses will be available to provide practical information regarding patient care and community resources. The families will be taught techniques for nursing care to make their home life easier and safer for all concerned. Nurses will also be available to provide emotional support and counseling to the caregivers of patients. Services will be available through the course of the illness including, when necessary, help with the often difficult decision-making process concerning institutionalization.

We hope that most if not all of our patients will be referred to an Alzheimer's Disease and Related Disorders Support Group, a volunteer organization which already provides a major support resource for the families of Alzheimer's victims. We also hope to be able to work closely with the patients' personal physician in the provision of continuing care for the patients and their families.

This combination of the interdisciplinary research and clinical team for diagnostic evaluation and treatment planning, along with outreach services to both patient and family, will provide a much needed addition to the care of these unfortunate patients and families and will also provide a focal point for our teaching and research programs.

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Resident Physician Essay Contest

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Essays will be judged on the following criteria:

SCIENTIFIC MERIT: Research methods, data analysis, subject or patient population selection, control of variables, literature analysis.

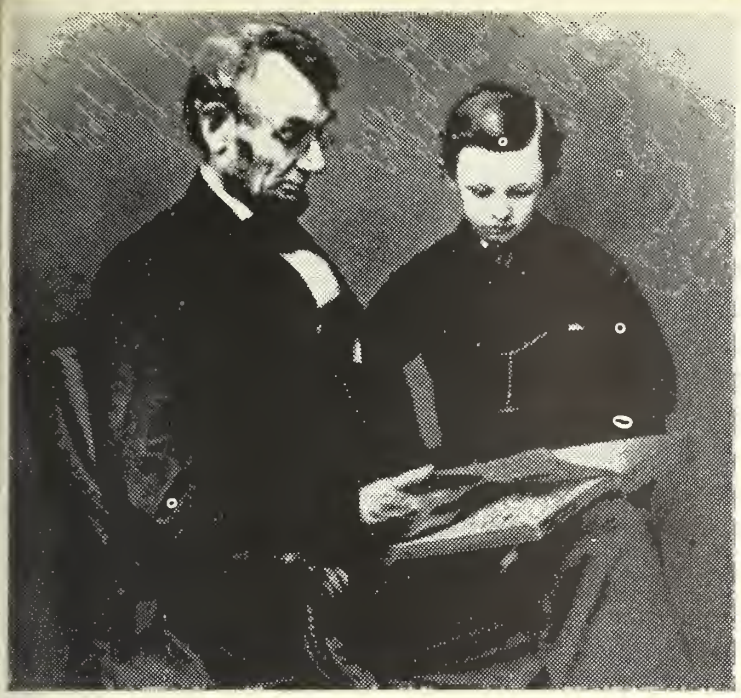
APPLICABILITY: Usefulness of results to private practitioner, academician, researcher.

CONTENT: Depth of analysis, continuity of discussion supporting the main thesis, feasibility of conclusions.

INNOVATION: Uniqueness of idea, creativity, improvement of existing techniques, previously undiscovered data, advancement of basic understanding.

Each essay will be assigned a numerical score for each of the four judging criteria by each judge as follows:

0 Unacceptable	3 Good
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DEATH AND DYING

Guest Editorial

GENE S. PIERCE, M.D.
New Albany, Ind.

Under what circumstances should a person be allowed to die without further diagnostic or therapeutic efforts?

This is a touchy subject and in no way is the equivalent of what the Colordao governor said a few years ago about just letting the old people die. When one looks down on the bed and sees the 76-pound, 94-year-old vegetative human without sight or response, with drawn-up knees and arms, with bedsores over most of the bony prominences—it is a particularly discouraging sight.

But in the nursing homes and in the ERs of the hospitals there is a woeful lack of reality on the one hand and a monetary consideration and a legal view on the other. The questions to be faced are: Do we request hospitalization when the worn-out, unrecoverable patient reaches the stage where there is no hope for recovery? Is it immoral to take a terminal cancer patient with metastatic lesions in the brain, lungs and bones to the hospital from the nursing home when there is absolutely nothing to gain by such a maneuver? The only gains may be monetary—much money can be derived from the numerous intravenous treatments and diagnostic procedures.

It is delicate to speak of this sort of thing happening between well human beings and sick bodies, but it occurs all too frequently and is in dire need of attention by the medical profession. Unfortunately, too many people are afraid to confront an administrator or colleague by bringing up such a matter. The subject is, therefore, confined to the surgical lounge or the street.

Perhaps a beginning could be made by conducting in-service instruction at nursing homes and hospitals to aid in the understanding of the sureties of dying and the circumstances found at that time. Personnel should be taught to make these terminal patients comfortable in a dignified manner regardless of their wasting bodies and long-gone minds. Patients should be assisted during their last hours on earth.

And then there is euthanasia.

Presently, in the Netherlands, a person may ask a physician for a lethal potion to end his life. After consultation with two colleagues, the physician can issue the lethal liquid to a dying patient who then can take it when he chooses. In the United States, with the present philosophy, it is unlikely that this type of prescribing will ever take place. From a physician's point of view, writing such a prescription would seem to be more for the convenience of the family than for the benefit of the dying person.

There is no reason for the dying person to suffer in those last, uncomfortable days when there is such a variety of pain medication available with so many ways of delivering that medication.

It is poor medical practice and lack of humanity to allow suffering to take place. Here again, though, it is very difficult to get the nurse giving the pain medication to give adequate amounts because many fear that the patient might die from an overdose. This, under the circumstances, would be inappropriate, and the nurse would be much better concerned with the lack of administering adequate amounts of pain killer.

Some physicians tend not to engage in any particularly strong efforts to investigate the strange phenomena often encountered in older people. They give the impression that they will merely help them along until the Grim Reaper comes to take his toll. There appears to be a cultural difference in the recognition of the extent of pain that a person is suffering and in the prescribing of medication for that pain. In many countries pain is an everyday experience, whether due to the suffering from a constantly gnawing stomach long without food, or from watching hundreds of people dying all around on a daily basis. It appears to deaden the sensitivity of the therapist.

This is one area where the elderly suffer from lack of good medical care in some facilities, partly because there is an attitude created around the elderly sick that is defeating from the onset. There is the knowledge that the person in his or her 80s or 90s is most surely not going to live much longer. This attitude seems to translate over into the attitude of the treaters. It must be said that it is not only the physicians, nurses, and aides who have this attitude toward older folks.

A great deal needs to be done on a daily care basis for our dying patients.

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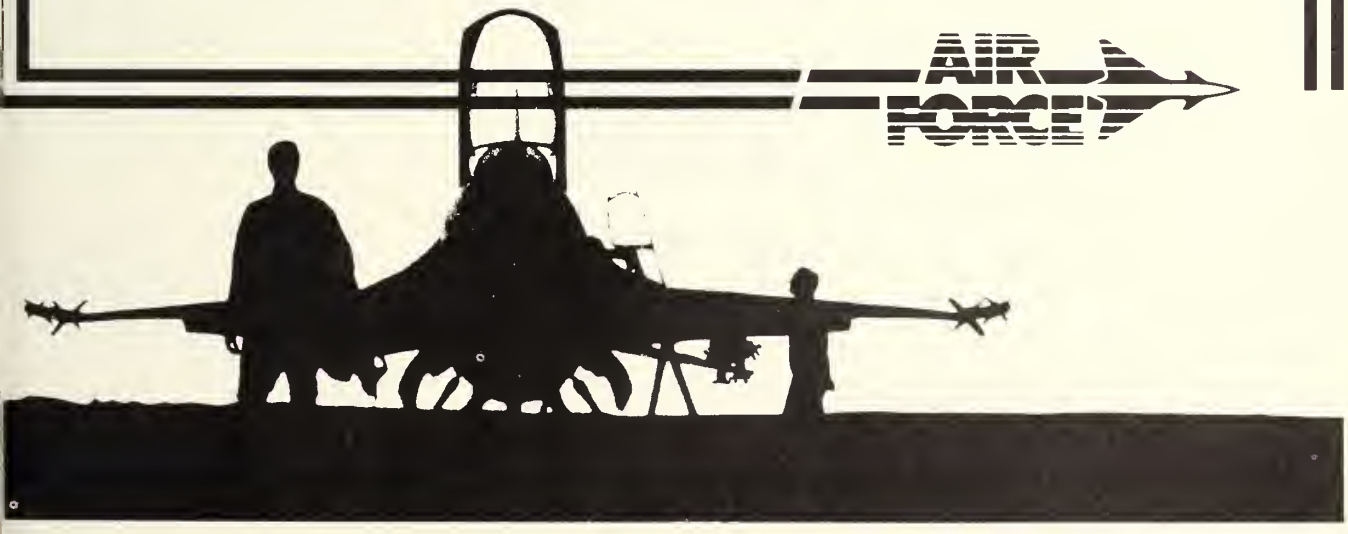
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AIR FORCE



Medicine's Lighter Moments

TED L. GRISELL, M.D.
Indianapolis



THE EXCITABLE PATIENT

NOT TOO MANY years ago, it was customary for members of Indianapolis Athletic Club to enjoy a social gathering called the Tulip Time Ball. This usually initiated the spring and summer social season in the city and constituted a gathering of several hundred people at an exotic and overly dressed ball for the club members and their friends. The gathering consisted of a banquet and dancing to a high-class orchestra.

During one of these affairs, to which I was probably coerced into attending, my wife and I were accosted by a young woman and her escort. The lady was attired in a most exotic dress with the decolletage exposing most of her ample female anatomy in a very enticing way. A slit up the back of her formal gown completed her exposure.

The approach by this vision of loveliness was also somewhat exotic. She exclaimed, "What a wonderful surprise!" to see me there and she wanted everyone within earshot to know that I had performed surgery on her that had saved her life by resuscitating her when her heart stopped. She told everyone I had provided such exemplary medical care that I was able to get her out of the Intensive Care Unit within a minimum of two or three days and to restore her to normal function in an unusually attentive and intimate manner. The implication was that my care had been more than the "usual and customary" for the type of illness from which she suffered.

All of this was accompanied by small hugs and kisses on the cheek and other signs of endearment that were certainly more than attention-getting as far as the people in the area were concerned. Upon the conclusion of this exuberant ebullient exhibition, I finally was able to excuse myself and get out of range, at which time I received several rather pointed remarks from my wife as to just "Who was that?" and "What was that all about?"

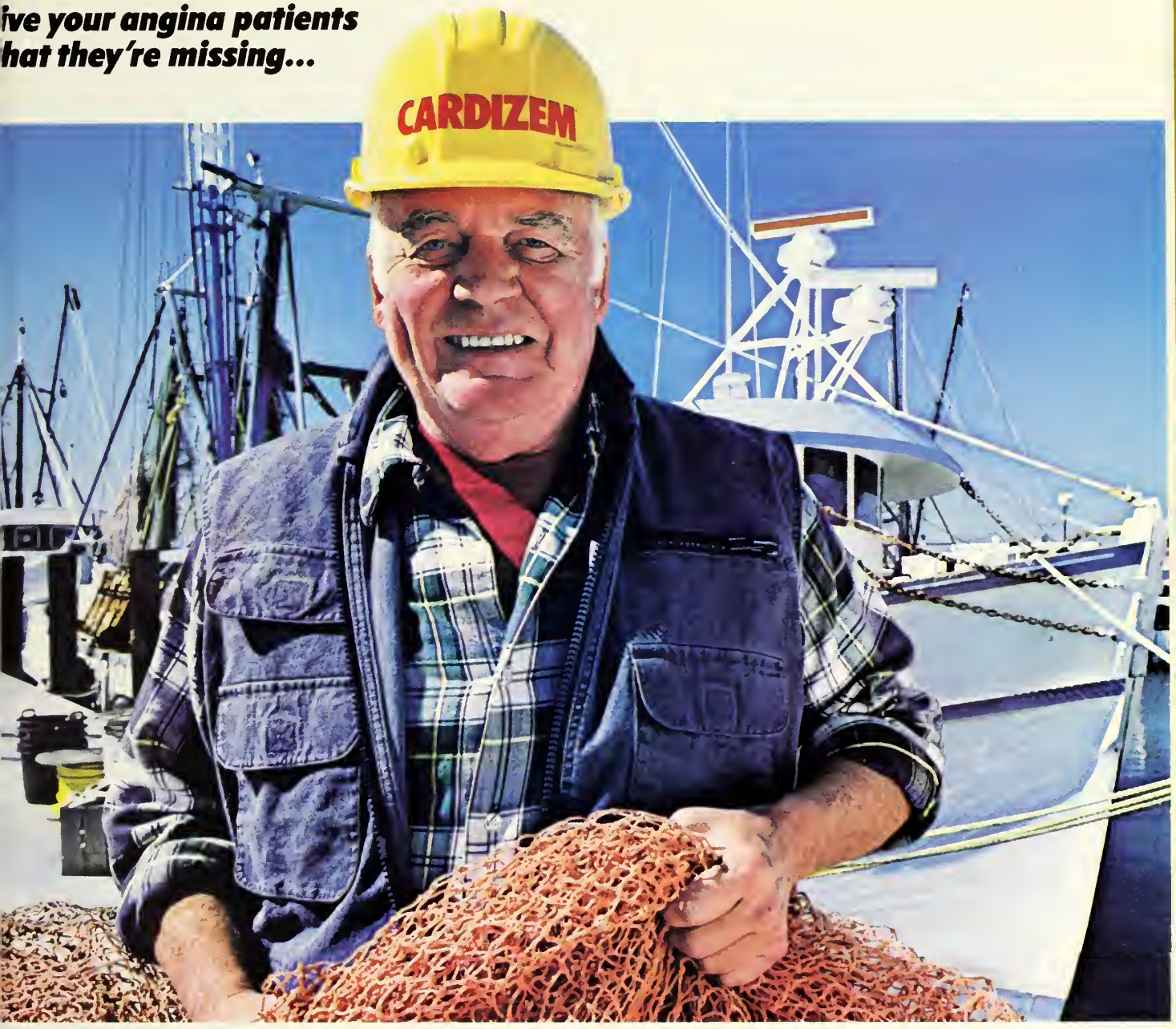
Unfortunately, my recall not only was poor but I couldn't even remember the woman's name—or the exotic treatment I was supposed to have rendered. In fact, it was such a burden to hear the various snide remarks I received from two or three friends at the ball that I could hardly wait to find someone there who knew the woman so I would have a name to research in my records.

The next day, the first thing that I did, even before I went to the hospital to do my usual morning surgery, was to research my files to find the name of this exotic individual. The name popped up in the files but it seems the surgery performed was relatively common, was remarkably simple, and was fraught with none of the perils I was credited with encountering and solving. The patient even left the hospital 48 hours ahead of the usual schedule.

Apparently, the woman's imagination had been working overtime and the lavishness provided by the intake of some extra fluids at the party had created the scene that caused my remarkable embarrassment.

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Brief Summary
Professional Use Information

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CONTRAINDICATIONS
CARDIZEM is contraindicated in (1) patients with sick sinus syndrome except in the presence of a functioning ventricular pacemaker, (2) patients with second- or third-degree AV block except in the presence of a functioning ventricular pacemaker, and (3) patients with hypotension (less than 90 mm Hg systolic).

WARNINGS

1. ***Cardiac Conduction.*** *CARDIZEM prolongs AV node refractory periods without significantly prolonging sinus node recovery time, except in patients with sick sinus syndrome. This effect may rarely result in abnormally slow heart rates (particularly in patients with sick sinus syndrome) or second- or third-degree AV block (six of 1,243 patients for 0.48%). Concomitant use of diltiazem with beta-blockers or digitalis may result in additive effects on cardiac conduction. A patient with Prinzmetal's angina developed periods of asystole (2 to 5 seconds) after a single dose of 60 mg of diltiazem.*
2. ***Congestive Heart Failure.*** *Although diltiazem has a negative inotropic effect in isolated animal tissue preparations, hemodynamic studies in humans with normal ventricular function have not shown a reduction in cardiac index nor consistent negative effects on contractility (dp/dt).*
   Experience with the use of CARDIZEM alone or in combination with beta-blockers in patients with impaired ventricular function is very limited. Caution should be exercised when using the drug in such patients.
3. ***Hypotension.*** *Decreases in blood pressure associated with CARDIZEM therapy may occasionally result in symptomatic hypotension.*
4. ***Acute Hepatic Injury.*** *In rare instances, significant elevations in enzymes such as alkaline phosphatase, CPK, LDH, SGOT, SGPT, and other symptoms consistent with acute hepatic injury have been noted. These reactions have been reversible upon discontinuation of drug therapy. The relationship to CARDIZEM is uncertain in most cases, but probable in some. (See PRECAUTIONS.)*

PRECAUTIONS
General. *CARDIZEM (diltiazem hydrochloride) is extensively metabolized by the liver and excreted by the kidneys and in bile. As with any new drug given over prolonged periods, laboratory parameters should be monitored at regular intervals. The drug should be used with caution in patients with impaired renal or hepatic function. In subacute and chronic dog and rat studies designed to produce toxicity, high doses of diltiazem were associated with hepatic damage. In special subacute hepatic studies, oral doses of 125 mg/kg and higher in rats were associated with histological changes in the liver which were reversible when the drug was discontinued. In dogs, doses of 20 mg/kg were also associated with hepatic changes, however, these changes were reversible with continued dosing.*

Drug Interaction. *Pharmacologic studies indicate that there may be additive effects in prolonging AV conduction when using beta-blockers or digitalis concomitantly with CARDIZEM. (See WARNINGS.)*

Controlled and uncontrolled domestic studies suggest that concomitant use of CARDIZEM and beta-blockers or digitalis is usually well tolerated. Available data are not sufficient, however, to predict the effects of concomitant treatment, particularly in patients with left ventricular dysfunction or cardiac conduction abnormalities. In healthy volunteers, diltiazem has been shown to increase serum digoxin levels up to 20%.

Carcinogenesis, Mutagenesis, Impairment of Fertility. *A 24-month study in rats and a 21-month study in mice showed no evidence of carcinogenicity. There was also no mutagenic response in in vitro bacterial tests. No intrinsic effect on fertility was observed in rats.*

Pregnancy. *Category C. Reproduction studies have been conducted in mice, rats, and rabbits. Administration of doses ranging from five to ten times greater (on a mg/kg basis) than the daily recommended therapeutic dose has resulted in embryo and fetal lethality. These doses, in some studies, have been reported to cause skeletal abnormalities. In the perinatal/postnatal studies, there was some reduction in early individual pup weights and survival rates. There was an increased incidence of stillbirths at doses of 20 times the human dose or greater.*

There are no well-controlled studies in pregnant women, therefore, use CARDIZEM in pregnant women only if the potential benefit justifies the potential risk to the fetus.

Nursing Mothers. *Diltiazem is excreted in human milk. One report suggests that concentrations in breast milk may approximate serum levels. If use of CARDIZEM is deemed essential, an alternative method of infant feeding should be instituted.*

Pediatric Use. *Safety and effectiveness in children have not been established.*

ADVERSE REACTIONS
Serious adverse reactions have been rare in studies carried out to date, but it should be recognized that patients with impaired ventricular function and cardiac conduction abnormalities have usually been excluded.

In domestic placebo-controlled trials, the incidence of adverse reactions reported during CARDIZEM therapy was not greater than that reported during placebo therapy.

The following represent occurrences observed in clinical studies which can be at least reasonably associated with the pharmacology of calcium influx inhibition. In many cases, the relationship to CARDIZEM has not been established. The most common occurrences as well as their frequency of presentation are: edema (2.4%), headache (2.1%), nausea (1.9%), dizziness (1.5%), rash (1.3%), asthenia (1.2%). In addition, the following events were reported infrequently (less than 1%):

Cardiovascular.	*Angina, arrhythmia, AV block (first degree), AV block (second or third degree — see conduction warning), bradycardia, congestive heart failure, flushing, hypotension, palpitations, syncope.*
Nervous System.	*Amnesia, gait abnormality, hallucinations, insomnia, nervousness, paresthesia, personality change, somnolence, tinnitus, tremor.*
Gastrointestinal.	*Anorexia, constipation, diarrhea, dysgeusia, dyspepsia, mild elevations of alkaline phosphatase, SGOT, SGPT, and LDH (see hepatic warnings), vomiting, weight increase.*
Dermatologic.	*Petechiae, pruritus, photosensitivity, urticaria.*
Other.	*Amblyopia, dyspnea, epistaxis, eye irritation, hyperglycemia, nasal congestion, nocturia, osteoarticular pain, polyuria, sexual difficulties.*

The following postmarketing events have been reported infrequently in patients receiving CARDIZEM: alopecia, gingival hyperplasia, erythema multiforme, and leukopenia. However, a definitive cause and effect between these events and CARDIZEM therapy is yet to be established.

Issued 7/86

See complete Professional Use Information before prescribing.

References: ***1.*** *Pepine CJ, Feldman RL, Hill JA, et al: Clinical outcome after treatment of rest angina with calcium blockers: Comparative experience during the initial year of therapy with diltiazem, nifedipine, and verapamil. Am Heart J 1983, 106(6):1341-1347.* ***2.*** *Shapiro W: Calcium channel blockers: Actions on the heart and uses in ischemic heart disease. Consultant 1984,24(Dec):150-159.* ***3.*** *Johnston DL, Lesoway R, Humen DP, et al: Clinical and hemodynamic evaluation of propranolol in combination with verapamil, nifedipine and diltiazem in exertional angina pectoris: A placebo-controlled, double-blind, randomized, crossover study. Am J Cardiol 1985,55:680-687.* ***4.*** *Cohn PF, Braunwald E: Chronic ischemic heart disease, in Braunwald E (ed): Heart Disease: A Textbook of Cardiovascular Medicine, ed 2. Philadelphia, WB Saunders Co, 1984, chap 39.* ***5.*** *Schroeder JS: Calcium and beta blockers in ischemic heart disease: When to use which. Mod Med 1982,50(Sept):94-116.*

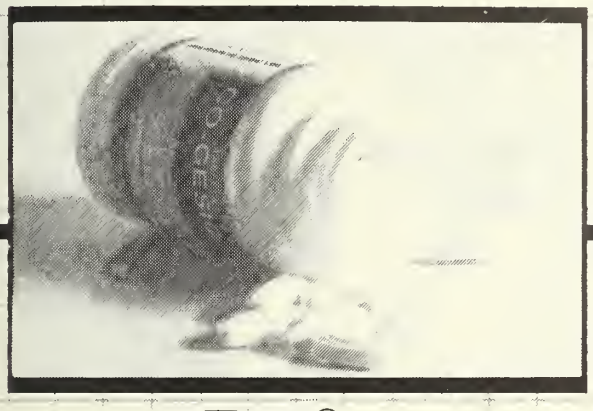
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The Strategic Context of Medicine and Health Care in America: 1985-95

DAVID PEARCE SNYDER
Bethesda, Md.

Abstract

The purpose of this document is to provide a context for the identification of long-term trends and developments that will be critical to the future of American medicine and health care in general, and the future of health maintenance organizations in particular. To achieve this purpose, the following paper is divided into two basic components. Part I, "Inevitable Forces for Change," summarizes the major demographic, economic and technologic trends and developments that will shape the operating environment of health care during the next 10 years. Part II, "Health Care for an Adaptive Society," examines the key linkages between health care and its changing social environment, with special concentration on social decision-making models and criteria that have particular relevance to the future role of the industry. Taken together, these two integrated sets of projections are intended to give health care providers a comprehensive, detailed understanding of the most probable near-term future, and the social and economic utilities they will have to serve if they are to remain effective in the coming decade of rapid, widespread, and inevitable change.

PART I
INEVITABLE FORCES FOR CHANGE
1985 to 1995

During the past decade, scholarly research has been conducted into the relative accuracy of different forecasting methodologies used within various fields or disciplines. This research has given us the first rigorous definitions of what we can know about the future with any useful degree of certainty. These research findings indicate that demography provides the longest range accuracy in forecasting; projections of the make-up of the adult population may be regarded as statistically reliable up to 15 years into the future. Technological forecasts—projections of the kinds of technology that will come into common use—are usefully accurate from seven to 10 years into the future. Significant developments or changes in economic performance, unhappily, cannot be reliably predicted more than 90 days in advance. However, large systems—such as a national economy—are enormously stable; they do not change their composition or direction radically over short periods of time. Thus, using historical trends, we can make relatively reliable projections about the basic characteristics of U.S. economic activity over the next five to 10 years.

To put these figures in today's perspective, we can pretty much know the composition of society between now and the year 2000. And, we can have reasonably accurate knowledge about the technologies that society will have at its disposal through 1995. Finally, while economic performance cannot be reliably forecast, the stability of our vast economic system does permit us to make some useful, valid assumptions about the most probable rates and directions of economic growth and change through 1990-1995. When combined, currently available demographic, economic and technologic projections make it possible to compile a coherent, detailed description of the principal features and dynamic interactions of the next 10 years.

Management surveys have shown that far and away the most common failure of planning is the use of *erroneous basic assumptions about the future*. Moreover, such research further indicates that the greatest achievements or improvements in organizational performance have generally not been due to any particular sophistication in planning, but rather from the avoidance of erroneous basic assumptions.

The essence of strategic management is to take actions that will accommodate or exploit inevitable future developments. The following compila-

The author is life-styles editor of *The Futurist* magazine and a pioneer social forecaster whose seminars on strategic planning and issues management have been attended by representatives from most of the Fortune 500. Formerly a consultant to the Rand Corporation, he is author of more than 100 studies, reports and books on the future of America's industries, professions and institutions, and on the impact of technology on society. Among his books is *Future Forces: An Association Executive's Guide to a Decade of Change and Choice*, published in 1984 by the American Society of Association Executives. This report, published with permission, was prepared for the Group Health Association of America. Copyright © 1985 by Gregg Edwards and David Pearce Snyder. Correspondence: The Snyder Family Enterprise, 8628 Garfield St., Bethesda, Md. 20817.

tion of trends and developments reflect the strategic realities which will—in large measure—determine the imperatives and opportunities that will characterize the operating environment for medicine and health care during the next 10 years. As such, they are the knowable elements of the near-term future which health care provisions must plan to accommodate or exploit if they are to manage their way through the coming decade rather than merely muddle through.

Demography

A Decade of Dramatic Changes in America's Human Resource Base

In his classic book, *The Wealth of Nations*, the great Scottish economist Adam Smith first asserted that a nation's principal resource is its people. Economic research since Smith's time has extensively validated this perception, and today, it is widely accepted that human resources are any nation's most valuable—and productive—asset. As the professionals charged with the principal responsibility for sustaining America's human resources, health care administrators must pay particular attention to the changing composition of the population. As has already been noted, the science of demography can provide planners with accurate, detailed information about the future make-up of society, from which crucial implications may be drawn regarding the nation's health care agenda. *Figure 1* depicts the make-up of the U.S. adult poplulation, broken down by six age groups, from 1950 to 2000. Four realities reflected in this data pose powerful implications for medicine and health care in the next 10 years.

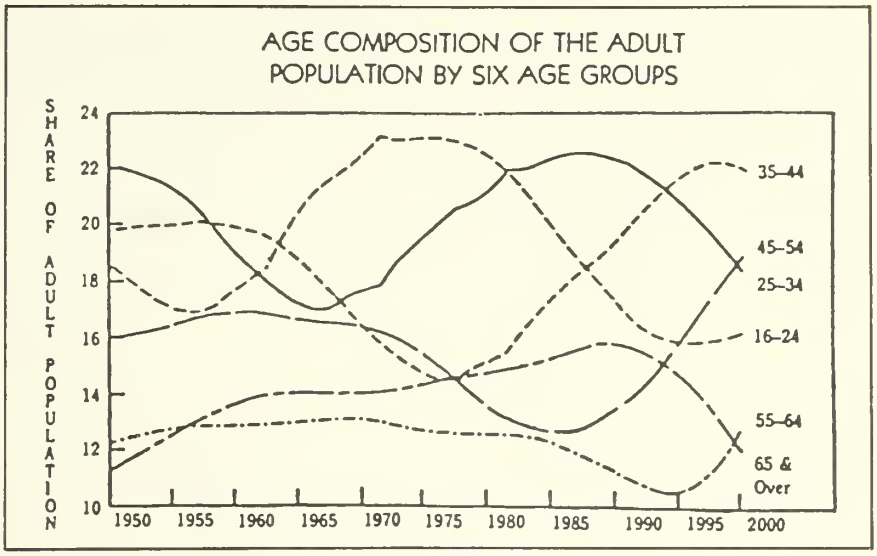


FIGURE 1

The "Baby Bust" Generation Comes of Age

Young adults (16-24-year-olds), will decline as a share of the total U.S. adult population, from 23% in 1978 to 16% in 1995, reflecting the decline in U.S. birth rates from 1958 to 1975. This will constitute a 30% shrinkage in the size of the entry-level labor pool, which is expected to drive up the wages paid to young, unskilled workers. To compensate for this short-fall in the labor supply, employers will be required to hire more women and minorities, reducing the general long-term levels of unemployment and under-employment. By 1995, women are projected to make up 47%-48% of the U.S. workforce (up from 44% in 1984), while minorities can be expected to rise as a share of the workforce from 10% in 1984 to 13%-14% by 1995.

While the foregoing developments will clearly represent significant progress toward increased social and economic equity in the U.S., they will also pose some substantial costs for American employers. From the early 1960s through the late 1970s, there was a surplus of entry-level workers in the U.S., as the Baby Boom generation poured into the adult population pool. As a consequence, entry-level wages were depressed, and employers were relatively free to hire and retain only the best qualified workers at relatively low salaries. But, as the entry-level labor pool steadily shrinks, more and more employers will be required to pay higher and higher wages for their new recruits. Thus, by the end of the 1980s, many employers will find themselves having to hire entry-level workers whose skills are so poor that they wouldn't have even considered recruiting them just five or 10 years earlier. Moreover, having been required to pay premium wages for marginal or sub-standard recruits, employers will subsequently have to pay for remedial training necessary to provide these workers with the competencies necessary to do the jobs for which they have been hired.

Some portions of the U.S. business community are promoting action that would alleviate the impending shortage of human resources through the importation of foreign "guest workers" patterned after European labor policies of the 1960s and 1970s. Economists estimate that America would have to import between 10 and 20 million foreign workers during the next 10 years in order to offset the wage-inflating effects of the "Baby Bust" short-fall. However, while a U. S. guest worker program *would* drive down the basic costs for unskilled labor by offsetting the shortage of workers, it *would not* eliminate the necessity for remedial vocational training. European

guest worker programs were necessitated by an *absolute* shortage of domestic human resources; during the 1960s and 1970s, unemployment rates in northern Europe were running between 1% to 3%. In the U.S., on the other hand, the importation of a large number of unskilled foreign workers would merely duplicate a substantial domestic reserve of unskilled human resources. Thus, under an American guest-worker program, once the expenditures have been made to provide a sufficient number of new recruits with the necessary competencies for productive employment, the U.S. would still be left with a substantial residue of surplus, unemployable persons—*a permanent, non-productive under-class.*

By the Mid-1990s, There Will Be 30 Candidates for Every Mid-Career Vacancy

As major employers of low-skill workers, medical institutions such as hospitals and convalescent homes will be forced to cope with the labor-market realities of the impending shortage of entry level employees. And, because they must serve the entire U.S. domestic population, the nation's health providers will also have to deal with the medical needs generated by any influx of "guest workers," whether legal or illegal.

The "Baby Boom" Generation Matures

At the same time that the young adult population will be shrinking, the number of middle-aged Americans (age 35 to 44) will be increasing by nearly 50%, reflecting the maturing of the post-WW II Baby Boom generation. Throughout its history, the huge size of the post-war Baby Boom has given it unusual power to alter the nation's market-place tastes and its political priorities. But, in the labor market, the size of the Baby Boom has worked to their disadvantage. As young adults, their large numbers created a surplus of new recruits that drove down entry-level wages and limited employment opportunities. (In fact, from 1965 to 1985, the average earning-power wages of all U.S. professions—including doctors, lawyers and engineers—actually declined due to the glut of Baby Boom graduates.) And now, as growing members of this generation move into middle age, they will also be moving into mid-career, with associated expectations of upward mobility. But, because of the rapid increase in the numbers of candidates for a relatively limited number of promotional opportunities, millions of Baby Boomers will be faced with what the demographers call "mid-career competition" due to "generational crowding."

During the 1960s and 1970s, there were not many Americans aged 35 to 44, due to the "Birth Dearth" of the Great Depression, during which U.S. birth-rates fell by one-third. In 1975, there were an average of 10 candidates for every mid-career promotion opportunity in the U.S. But, today, there are 18 to 20 candidates for every mid-career vacancy, and by the mid-1990s, the ratio will be 30 to 1, or higher. Labor force analysts believe that, as upward mobility is increasingly curtailed, there will be rising worker frustration, alienation and stress, leading to reduced productivity and higher turnover. At least some of these employees will return to the entry-level labor pool in order to launch new careers. Many of these workers are already going back to school to learn new skills that will increase their promotability, or will permit them to shift careers to fields with greater potential for advancement. Thus, during the next 10 years, the inevitable forces of generational crowding among the post-war Baby Boomers can be expected to produce significant increases in the demands for adult education, steadily transforming "life-span learning" and "sequential careers" from theoretical concepts to practical realities.

As with the impending short-fall in the number of young adults, the excessive numbers of middle-aged people in the U.S. population profile over the coming decade will affect medicine and health care both in terms of its human resource base *and* its clientele. The 25- to 50-year-old age group reflects the lowest rates of per capita medical intervention of any group in the adult population, and their share of all Americans will grow from roughly 50% to 65% during the next 10 years. When this shift is coupled with the projected sharp declines in the numbers of young adults and persons over 65—who historically have the highest per capita demands for medical intervention—it becomes clear that the underlying demographic changes between 1985 and 1995 imply significant diminution in the general marketplace demands for traditional, fee-for-source, curative medical services.

At the same time, the rapid growth in the middle-aged population suggests strategic opportunities for innovative health care services. Specifically, survey research shows that persons under 40 have higher propensities for adopting health-promoting behavior than do older persons. Moreover, the job-related stress resulting from mid-career compaction will be exacerbated by work-place turbulence and uncertainty arising from the nation's transition to post-industrial production (see following discussion on Trans-Industrial Economics). Taken together, these two sets of factors can be expected to substantially increase the in-

cidence of stress-related dysfunctions among traditionally healthy middle-aged people.

As has already been observed, the Baby Boom produced worker surpluses throughout the labor pool, including a substantial over-supply of doctors. Thus, the problems of mid-career compaction can be expected to arise throughout the professional ranks of medicine and health care. Moreover, the high costs and specialized values associated with medical training are likely to minimize the numbers of doctors who will change fields in pursuit of career success. To the contrary, generational crowding is more likely to produce initiatives within the medical profession designed to improve the economic outlook for doctors. Within the dynamics of the marketplace, however, the existing availability of under-utilized doctors is also likely to foster the entrepreneurial development of innovative health care delivery systems and services. This, in turn, will promote increased competitiveness and diversity in the health care market.

The Baby Boom Echo Is Heard in the Land

Since the full size of the post-war generation first became apparent, demographers have been forecasting that the principal legacy of the first Baby Boom would be a second Baby Boom, called the "Baby Boom Echo." And, even though U.S. birth rates began to rise in 1977, the Census Bureau waited until 1982 to finally confirm the event, by forecasting that a new Baby Boom was about to occur. The new surge in births is expected to peak around 1990, at about 4 million per year, ultimately producing about the same number of children during the next 10 years as did the first Baby Boom during the 1960s. It should be stressed that the rising numbers of births does not reflect a rise in fertility rates. In fact, average numbers of children per household have continued to fall steadily since the 1950s, in a trend that is common to all mature industrial nations. The Baby Boom Echo will simply be the result of the fact that roughly two-thirds of all U.S. adults will be passing through their child-bearing years during the next decade. Surveys of Americans of child-bearing age consistently show that 75% of them plan to have one or two children. Thus, the new baby boom will not reflect a return of large families, but merely the reality of tens of millions of couples producing one or two offspring apiece.

The rising number of births, combined with a simultaneous growth in the numbers of working women will, by definition, produce a significant increase in the numbers of working mothers. In fact, current forecasts indicate that, by the early 1990s, between 60% and 65% of all U.S. mothers will be gainfully employed, up from 40% in 1979, and an estimated 50% in 1985. These ratios would suggest that, by 1990, over half of the U.S. workforce will have at least one child at home under the age of 18 without parental care or supervision. This will include 9 to 10 million pre-schoolers (up from 6.5 million today); and 18 to 20 million school-age children (i.e., "latch-key" children), up from about 9 million in 1980. This projected vision of a rising tide of unattended children has provoked an ongoing public policy debate over the correct institutional solution to this growing social phenomenon. However, surveys of working parents clearly show that, rather than consign their offspring to institutional care, most would prefer that their employers institute new workplace arrangements such as flex-time, paid parental leave and flex-place (i.e., work at home)—so that they can care for their children themselves while also holding a job.

These parental utilities are so strong that labor market analysts believe they will force rapid changes in traditional workplace arrangements. At least 25% of the workforce is projected to be on flex-time by the early 1990s, up from 8.5% in 1981, and 14.5% in 1984. Another 28% are expected to be on part-time or job-sharing arrangements, up from 20% in 1984. And, researchers further estimate that as many as 8% to 10% of all salaried employees—mostly information workers—will be working out of their homes by 1990; 13% to 18% by 1995. As major employers, medical and health care institutions will need to make use of all of these innovative workplace arrangements and policies as means of reducing their labor costs and of enhancing their abilities to attract and retain qualified personnel.

Two-Thirds of Adults Will Pass Through Child-Bearing Years in the Next Decade

Analyses by economic demographers have demonstrated a close link between the post-WWII Baby Boom and the rapid growth of the U.S. medicine and health care industry from the 1950s through the 1970s. The propensity of parents to invest in their offspring has been well documented, and in the growing prosperity of the post-war years, Americans made the bulk of those investments in health care and education, making those two fields the first and second largest industries in the nation, respectively. From conception, through pre-natal and pediatric care, medical expenditures per child increased as the number of children in-

creased. Moreover, steadily improving medical technology and practice gave rise to new services, from promoting conception to correcting birth defects. In addition, since children and young adults have unusually high rates of illness, and the highest rates of accidental injury, non-discretionary demands for medical intervention rose with disproportional speed during the 1945-65 period.

In light of these fundamental dynamics, it would be reasonable to assume that a Baby Boom Echo will produce a similar growth in market-place demands for health services. This easy assumption must be tempered with caution and consideration, however. In the first place, economic demographers have demonstrated that birth-rates are closely correlated with current and expected well-being. Thus, the ultimate size and timing of the new baby boom will be extensively determined by the performance of the economy over the next 10 years. And, as observed in the following segment of this paper, the outlook for the U.S. economy is highly problematical. Moreover, it has also been documented that, as parents have fewer children, the parental commitment to, and investment in, those offspring that *are* produced goes up proportionally. This suggests that Americans will be willing to increase their per-child expenditures on medicine and health care. At the same time, however, an ever more educated and secularized society will almost certainly couple these increased expenditures with increased expectations of performance by health service providers (see discussion of "More Informed Consumers" in Part II of this paper).

Health care providers have, of course, already begun to experience these emerging new marketplace realities. Over the past decade, many hospitals have increasingly seen their maternity wards go from profitable, "mass-production" operations to costly, potentially risky, individually crafted personal services. It has been in medicine and health care, more than any other sector of the economy, that the public's expectations for "fault-free" products and services has shifted the emphasis of market-place transactions from "caveat emptor" to "caveat venditor." And nowhere within the health care field have these expectations been more tangibly expressed than in the areas of maternity and pediatrics, as reflected by the rise in malpractice and class-action consumer suits against hospitals, doctors and pharmaceutical manufacturers. Indeed, with the declining birth rates of the Baby Bust years (1965-1975), some hospitals found it financially expedient to close down their maternity services altogether.

Faced with the generally rising public demand for particularized, fault-free services, those health care providers who have remained active in the maternity and pediatric field have been forced to increase the price of their services, to cover more sophisticated functions and increased insurance costs. These price rises, in the free-market economy, have logically provoked the growth of competitive service-providers including birthing centers, mid-wifery, independent nurse-practitioners, and store-front emergency medical centers catering to the accident-prone young. Thus, the imminent Baby Boom Echo and the ensuing growth of the youth population cannot be regarded simply as a source of extrapolated growth in health and medical services as was the original Baby Boom. To the contrary, while the demand upon health care providers for maternity and child care services will almost certainly increase substantially over the coming decade, rising levels of public sophistication will sustain an increasingly selective clientele with a propensity to support a variety of innovations in pursuit of superior products and services, especially those that purport to offer quality services at reduced costs.

Of the Total Adult Population, Those Over 65 Will Fall to 12% by 2000

"Birth Dearthers" Become Senior Citizens

It is widely asserted by health-care planners that the long-term increase in average life span will inevitably produce a steady, long-term growth in the numbers of elderly people in the U.S. And because older persons—like children—reflect higher than average per-capita demands upon the health care system, it is commonly assumed that the "graying of America" will generate a steady growth market for medical goods and services. While these assumptions are sound as far as they go, they fail to take into consideration the rapid drop in birth rates that occurred between the two World Wars. From the mid-1920s through the mid-1930s, U.S. birth rates fell by one-third, and did not return to mid-1920s rates until the 1950s. During that same time span, average life expectancy only increased about one-sixth, and thus will not compensate for the absolute decline in the numbers of people over 65 years old during the remainder of this century. As a share of the total adult population (and the health care market), those over 65 will fall from 15% in 1980 to 11% or 12% by 2000. Within this shrinking market, however, there will be a growth seg-

ment of people over 85 years of age, who are expected to more than double in numbers, from roughly 2.5 to 5 million persons, between 1985 and the year 2000, as improved medical services extends our ability to sustain life in the very old. This will increase their share of the total adult population from 1% to 2% during the next 15 years.

After the year 2000, of course, the absolute numbers of persons over the age of 65 will begin to grow rapidly, peaking around 2020, as the Baby Boomers enter their "golden years." (Note: Since technology forecasts—including forecasts of medical technology—have been shown to be unreliable beyond 10 years, it is not possible to accurately project the specific size of the over-65 population into the next century. The underlying demographic realities, however, assure that their numbers will grow substantially.) In the near-term future—1985 to 2000—the demographic realities of the over-65 health care market are somewhat more problematical. Real growth in patient population will occur only among those over 85, for whom medical intervention—by definition—poses diminishing effectiveness, and among whom a rising secular-rationality is promoting increased resistance to both "heroic" life-sustaining measures and institutional "warehousing" of the old and infirm. The dynamics within this segment of the patient population thus seem likely to foster the growth of new marketplace alternatives—e.g., "hospices," home care for the elderly, etc.—and to intensify the debate over such public policy issues as "the right to die." Strategically, health care providers should plan to spend the next 10-15 years engaged in the heuristic development of an appropriate array of medical support options and policy resolutions to meet the needs and expectations of the nation's senior citizens, so that the health care delivery system will be prepared to cope with the explosive growth in the over-65 population after the year 2000.

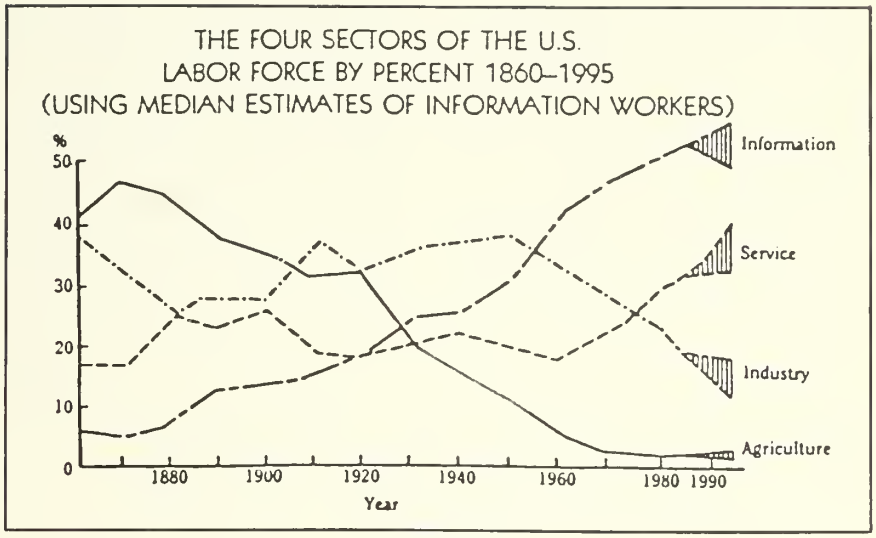


FIGURE 2

The Economy

Ten Years of Trans-Industrial Turbulence

There is considerable uncertainty today about the future direction of the American economy. This is not without reason, since different indicators appear to reflect differing realities. For example, while the industrial sector still produces the largest single share of the U.S. GNP (46%), the information sector employs most of our workers (51%), and the service sector is growing fastest both in employment *and* share of GNP. However, when all of these factors are pulled together, they reflect an orderly and logical process of transition, as the U.S. passes over the threshold of a new economic age. Simply put, America is currently about half-way through an economic transformation that is *at least* as substantial as the Industrial Revolution.

The United States entered the industrial age around 1900, 50 to 75 years or so after the major European nations. Thus, the U.S. was able to copy much of its industrial engineering, infrastructure arrangements, and institutional initiatives (e.g., Social Security, workman's compensation, labor unions, unemployment insurance, etc.) from successful European models. In the current economic revolution, however, *the U.S. is in the forefront!* There are no successful models for us to imitate. Just as Britain, France and Germany had to invent the institutions and arrangements to solve the socio-political problems of the industrial age a century ago, the U.S.—and Japan—will have to create the basic infrastructure and institutional arrangements of the information age, much of it during the next 10 years.

Figure 2 shows the make up of the U.S. labor force, broken down by four major economic sectors, from 1860 through 1995. The shaded areas for 1985-95 reflect range estimates, depending upon different assumptions regarding automation, productivity, worker retraining and international trade. The dominant contemporary feature of *Figure 2* is the pre-eminent position of information work, which has been the principal U.S. employer since 1956. Moreover, no reasonably anticipatable combination of future factors is expected to change this reality during the next 10 years; in 1995, information work will still be the nation's largest employer, while service work will remain the second largest employer, industrial work will remain the third, and agriculture will continue

to represent only a small minority.

The potential shifts in workforce mix during the next 10 years will arise largely due to various efforts to improve productivity. *The pursuit of increased productivity will be the principal underlying economic force for every marketplace enterprise during the coming decade*, including medicine and health care. This compelling need for increased productivity will be driven both by the shortfall in the labor pool *and* by competitive pressure from the "Newly Industrialized Countries" of the Third World. After decades of developmental investments in infrastructure and education, nations like Korea, Brazil and Taiwan are now increasingly able to produce a growing range of sophisticated industrial goods with low-cost skilled labor. Thus, to remain competitive—and to maintain their high standards of living—the mature industrial nations will have to achieve *unprecedented increases in productivity* over the next five to 10 years.

Improved Productivity in the Next Decade Will Cost the Jobs of 20 Million Americans

In the industrial sector, increases in productivity are variously projected to eliminate from 6 million to 9 million jobs in the coming decade. In the information sector, the potential job losses from automation within the same time frame are estimated between 5 to 10 million. Service sector employment, on the other hand, is expected to grow for two reasons. In the first place, the service sector has always functionalized as the marketplace "employer of last resort" during periods of high job displacement; this is largely because service work, on the whole, requires fewer specialized skills than do the other sectors of the economy. Thus, the current growth in service employment is expected to foster a continued increase in the number of two-wage-earner households, as families seek to maintain overall income levels in the face of declining average per capita wage levels.

Over all, labor force experts project that, during the next 10 years, three-fourths to seven-eighths of all jobs that will be eliminated through productivity improvement and foreign competition will be high-skill, middle or upper income positions. At the same time, only one-sixth to one-fourth of all new jobs to be created during this same period are expected to be upper or middle income positions. Thus, the next decade is expected to see an absolute decline in the number of middle-income, middle-class jobs in America, continuing a trend that first appeared in the late 1970s. To sustain middle class life styles in the face of diminishing middle-income job opportunities, millions of U.S. households will be forced to augment their income through additional jobs. Economic demographers project that two-job households will increase from just over one-half of all families today to nearly three-fourths by the mid-1990s. This increase in the labor market participation rates among all adult family-members will commensurately reduce the amount of discretionary time available to most households. Households are expected to compensate for this reduction in discretionary time by buying more services, such as restaurant meals, pre-prepared frozen foods, commercial laundry, yard care, housekeeping, maintenance and repair, etc.

(Note: There has been a growing body of literature on "time economics" over the past decade, demonstrating changing consumer utilities for time, and linking the personal value of time to the growing demand for consumer services. Given the high intrinsic value of medical services (i.e., restored or sustained good health), it is probable that time intensiveness will not be a *primary* decision criterion in consumer choices within the health care market. But, among comparable, competitive options for health and medical services, consumer time-economics will almost certainly be a pivotal selection criterion.)

In summary, during the next decade many people will shift into the service sector as a temporary expedient while they seek other, more profitable employment, or while they return to school to acquire new skills that will improve their ability to find a more rewarding job. In addition to these temporary service workers, many displaced employees will remain in the service sector for the remainder of their careers, in response to the underlying long-term increase in the demand for services. These dynamics account for the substantial projected increase in service employment in what is widely presumed to be a "high-tech" economy. In fact, while there will be rapidly increasing demands for such jobs as computer systems analysts, programmers, and data processing mechanics, these increases are expected to generate only a few hundred thousand new positions over the next 10 years. By comparison, during this

same period, service work will generate millions of additional jobs, including over a million new jobs in the food services industry, and nearly that many in low-level health care functions, such as nurses and nurses aids, orderlies, and janitorial personnel.

In total, then, an estimated 15 to 20 million skilled blue collar, technical and professional employees will lose their jobs due to improved productivity during the coming decade. Of these, 3 to 5 million will be middle and upper level white collar personnel who will lose their jobs due to the "de-layering of management" throughout major U.S. organizations. This de-layering, which began in the early 1980s, reflects a new U.S. management philosophy, modeled on the decentralized organizational structures of successful European and Japanese firms. The rapid adoption of these new structures has been made possible by new electronic management information systems, and made expedient by the "Great Recession" of 1979-83. From 1981 to 1985 over half of the "Fortune 1300" firms reported eliminating at least one entire layer of management nationwide. This "flattening" of the pyramidal profile of the traditional organizational chart will have the additional effect of further limiting the promotional opportunities of the Baby Boomers whose careers are already being curtailed by generational crowding.

As has already been observed during the discussion on demographics, the coming decade will see the number of 25- to 50-year-olds grow steadily to make up nearly two-thirds of the U.S. adult population. Historically, this age group has had a lower requirement for medical services than either younger or older adults. However, as economic transition and technological innovation generates increasing turbulence in the workplace, the twin trauma of job-loss and enforced career changes are expected to generate a widespread rise in mid-life stress and associated health problems. (Within the last five years, job-related stress has risen to become the single most common cause of employee disability retirements.) Thus, contemporary circumstances are likely to offset—at least somewhat—the historic demographic realities which would otherwise have been expected to produce a general decline in adult requirements for medical intervention and health care services. At the same time, emotionally induced illnesses represent a different type of pathology from purely biological afflictions; a pathology for which health care providers have not yet resolved a standard array of commonly accepted, proven treatments. This would suggest that the profession's ability to effectively serve what will almost certainly be a growing new market is somewhat problematical. Available research in this area indicates that there will be a growing need for prevention, diagnosis and treatment based upon an improved integration of the physical and mental health professions. Since there has been little actual application of truly integrated psycho-physical health care, this would suggest a significant potential exists for research and development of innovative services and delivery mechanisms to respond to the medical consequences of widespread mid-career compaction and transition.

Job Loss and Enforced Career Changes Will Generate a Rise in Mid-Life Stress

Education Becomes America's Largest Industry

As discussed above, a new Baby Boom, remedial education for sub-standard entry-level recruits, and the re-training of 15 to 20 million displaced and topped-out workers will all place major new demands upon American education. In addition to this, research by the National Science Foundation has determined that *fully one-half of the costs of automation will be for the training of employees to work with their new electronic workplace technologies.* When combined with the other growth requirements for learning, this would indicate that, by 1990, the total annual expenditures for education will have grown by 20% to 25% from 1981 levels, and education will have surpassed medicine and health care to become the largest industry in America.

(Note: As was observed in the Demographic section of this paper, the Baby Boom generation led to a surplus of all major traditional professions, including doctors. Currently, however, the decline in the young adult population, combined with rising educational costs and low growth in real personal income, is producing a drop in enrollments in professional education, including medical schools. Over the coming decade, these trends can be expected to redress the over-supply of doctors in terms of gross numbers. However, in a time of rapid innovation in medicine and health care, this will also mean that a steadily decreasing share of practitioners will possess the most up-to-date training. This suggests that health care providers may be faced with continuing education costs that will be *even higher* than those for other professions, trades or industries.)

Worldwide Capital Shortage Sustains Double-Digit Interest Rates Through the End of the Century

In the pursuit of increased productivity, U.S. firms currently plan to

spend an estimated $500 to $650 billion on automation. At the same time, increased national demands for education and training over the next 10 years are likely to cost between $500 and $750 billion. These outlays, however, are relatively modest when compared to recent projections of U.S. infrastructure replacement requirements: e.g., $3.3 trillion for urban infrastructure replacement; $5.5 trillion for expanding, upgrading or replacing the residential housing stock; $1 trillion for repair of the transportation infra-structure, etc. These huge demands, of course, merely represent U.S. capital requirements. The other mature industrial economies are also pursuing productivity-enhancing capital investments; they will also have to retrain large numbers of their workers, and replace substantial amounts of their infrastructure. Moreover, the Third World nations will need to make investments of a similar scale simply to assure that their economies continue to grow rapidly enough to keep ahead of their rising domestic populations and expectations. The principal U.S. economic models all forecast that, as a consequence of these enormous, combined investment requirements, there will be an ongoing worldwide capital shortage throughout the rest of the 20th century, with double-digit interest rates lasting through 2005, or beyond. Even if the U.S. budget deficit were eliminated, analysts indicate that this would only produce a short-term (1-2 year) decline in the costs of capital, after which the huge underlying demand for capital funding would drive basic commercial interest rates back up over 10%.

Such forecasts are accepted by many economists, most of whom believe that only a worldwide depression or a decade of unprecedented productivity gains will bring long-term commercial interest rates below 10%. Many business leaders share this view, and are concerned that high interest rates will substantially restrict capital investments, as a result of which substantial sustained productivity improvements will not be achieved. If this were to happen, it is the conventional view that the mature industrial economies will slowly drift back into stagflation, dragging the rest of the world economy down with them. In this context, a key strategic consideration for all forms of enterprise during the next 10 years will be to achieve high increases in productivity *with minimal capital expenditures!*

The Need to Increase Productivity Will Be Greatest in the Medical-Health Care Fields

In no industry or profession will the imperative to increase productivity be greater than in medicine and health care. Recent national policy studies generally conclude that, without substantial improvements in productivity, the actual levels of health care in America will have to be reduced because of exhorbitant costs. Moreover, economic analyses have shown that the rapidly inflating costs of health care and medical insurance have been a principal cause of the declining competitiveness of U.S. manufactured goods in the world marketplace over the past 20 years. Thus, improved productivity in medical services will be critical to restoring America's general economic performance. Finally, in spite of continued public support for high quality health care, the fact of the matter is that the society and the nation will have many other compelling needs on their agenda during the coming decade which will necessarily limit the additional resources that may be allocated to health and medical services.

Production and Population Disperse Throughout the Nation

In a 1982 survey of high-tech firms, the Joint Economic Committee of the U.S. Congress (JEC) found that the most important criterion for selecting new plant sites is the local availability of skilled, technical and professional workers. By comparison, fewer than half of the companies surveyed indicated that the availability of water or waste treatment facilities, or proximity to raw materials or markets were significant site selection criteria. On the basis of these findings, the JEC pronounced that high-tech industries are "footloose" enterprises which are free to locate their operations wherever they have access to quality human resources, or where they can attract quality human resources. Moreover, since human resources are *also* relatively free to move wherever they wish, the potential for both industrial and population migration during the near-term future will be unusually high.

Of course, the mass movement of people and production to the Sun Belt over the past 25 years is well understood, and it is expected to continue—although at a somewhat diminished pace—for at least the next 10 years. At the same time, the Census Bureau forecasts that the highest growth rates during the remainder of the 20th century will be in the Rocky Mountain states, where statewide population increases of 50% to 150% are expected. There is a third major migratory movement under way in the U.S., however, which poses more significant long-term implications for health care providers. This is the dispersion of both population and productive enterprises out of

the center cities, and into "exurbia"—i.e., those areas roughly 25 to 100 miles outside of existing urban hubs. Since the early 1970s, growing numbers of workers and their employers have been moving into exurban regions in pursuit of lower costs and improved environmental "ambience." As a result of this migration, during the 1970s, rural population grew faster than both urban *and* suburban populations for the first time in U.S. history.

Big cities are costly to live in and to operate in. Cities grew and multiplied over the past 200 years in direct response to the expanding needs of large, labor intensive industries. But, as fewer enterprises require either the physical infrastructure or the huge pool of workers that cities provide, there will be less and less reason for businesses not to relocate outside of expensive urban areas. As a consequence, there will be declining needs for cities. At current migration rates, substantial portions of center city commercial and human resource bases will be eroded over the next 10 years. Contemporary efforts at urban renewal have simply failed to understand the underlying structural nature of urban decline. The nation's health care providers—along with educators, administrators, police and fire services, etc.—have all been attempting to deal with the increasingly intractable problems of urban operations as temporary, reversible phenomena, when—in most cases—they are not! Until—and unless—center cities achieve some form of renewed economic utility, they will continue to deteriorate physically and socially, providing an untenable context for effective, coherent health services. Thus, while the growth of exurbia would suggest compelling opportunities for productive innovations in health care systems and institutions in rural areas, it is unclear whether the rapidly eroding urban base will eventually be able to sustain anything but the most rudimentary array of medical services, as in underdeveloped nations of the world.

Technology
New Machines, New Arrangements, New Relationships and New Ways of Doing Practically Everything

"Technology" is the way we do things. Specifically, it is the way we arrange our resources and ourselves to get things done. There are two distinctively different types of technology. Tools, machines, chemicals or structures, etc., are regarded as physical—or "hard"—technologies, while organizations, institutions and laws, etc., are characterized as social—or "soft" technologies. Both "hard" and "soft" technologies are powerful and essential tools of human progress and productivity. But they differ from one another in one crucial characteristic that is of great importance to all managers, including health administrators.

Hard technologies are inherently durable, as their name suggests. As such, they change relatively slowly over time. Large physical technologies, such as factories, dams or hospitals, etc., typically have useful service lives of 50 to 100 years. Similarly, even when supported by a "national commitment," major breakthroughs or innovations involving hard technologies (e.g., fusion power, a manned moon landing, a mechanical heart, etc.) generally take a long time; at least 10 years, and often much longer. On the other hand, soft technologies—e.g., organizations or institutions—including very large and powerful ones, such as social security or environmental protection laws, can be implemented within one or two years. Similarly, large social technologies can be eliminated or radically altered quickly (e.g., the repeal of Prohibition, bank and airline deregulation, the current de-layering of modern U.S. management, etc.). Because of this singular difference, it is possible to forecast future implementation rates for new hard technologies with some accuracy, while it is not possible to accurately forecast the development of new social technologies. This is especially true for times of transitional change, when there are no historical models of appropriate social technologies.

Social technologies are creations of the moment and, as such, they offer policy makers and industry leaders their principal opportunities to shape the future. Moreover, powerful new social technologies are often made possible by new physical technologies. For example, flex-place (salaried work in the home) is a new social technology that has been made possible by a new physical technology—the microcomputer. Historical evidence, in fact, suggests that *the most substantial increases in productivity are typically achieved through just such synergistic combinations of innovative hard and soft technologies.*

As More Businesses Move to the Suburbs, the Need for Cities Is Expected to Decline

A Second Industrial Revolution

The estimated $150 to $200 billion investment in industrial automation which U.S. manufacturers plan for this decade will represent the replacement of only 10% to 15% of the total fixed capital plant and equipment of U.S. industry. In short, the current surge of robots and computers into American mills and factories represents the initial stage of what is projected to be

a 30- to 40-year revolution in the structure and organization of manufacturing. At the completion of this revolution, most factories will be single, complex machines, each capable of producing a wide variety of goods. As this occurs, the main assets of industrial firms will increasingly be the sophisticated software and data bases through which they will control the performance and output of these automated, general purpose plants.

Service Sector Employment Will Grow as Workers Lose Out to Productivity Reforms

This first decade of the electronic industrial revolution will entail mostly incremental, single function applications of robots and CAD/CAM systems to individual manufacturing tasks. Recent experience suggests that these particularized applications can be expected to produce 30% to 40% improvements in the productivity of the specific operations where they are used, and generate an average 15% to 20% return on investment. Such benefits will be sufficient to fuel a steady growth in these kinds of single function applications. However, economic input/output analyses indicate that, even if *all* U.S. manufacturers were to exploit the fullest potential of such investments, the resulting increase in U.S. industrial productivity, by itself, would be insufficient to restore the general competitiveness of American goods in the world marketplace. For example, comparisons of the U.S. and Japanese auto industries have revealed that only 20% of the Japanese competitive advantage over American-built cars is due to the use of advanced hard technology, while *80%* is due to better Japanese management, including more productive workplace arrangements and management-labor relationships, such as worker design teams, or "Quality Circles"—i.e., superior soft technologies.

Typically, this "better management" includes the redesign of entire production systems to take advantage of the increased speed and capabilities offered by robot assemblers. It also involves rearranging logistical support systems to reduce the down-time of costly automated equipment. Workplace research shows that such redesign and rearrangements can increase the productivity of new hard technologies by 100% and 400% or more. In short, in order to restore full competitiveness to the U.S. industrial sector, it will be necessary for American manufacturers to utilize a combination of innovative "hard" and "soft" technologies in their operations.

Information Workers Get Their First Taste of Automation

While U.S. employers currently plan to spend $150 to $200 billion in industrial automation, twice that amount ($300-$400 billion) is budgeted for automating information work. To a large degree, this disproportionate commitment to information automation is due to the fact that the average U.S. industrial worker is already supported by approximately $30,000 worth of productivity-enhancing capital investments, while the average information worker is supported by only $2,500 worth of capital goods. By 1990, the per capita capital investment for each blue collar worker is projected to rise to $40,000 (an increase of 35% over 1980), while white collar capitalization in expected to reach $8,000 to $10,000 per employee, (an increase of 300% to 400%).

While some of this massive investment will go to providing millions of individual information workers with new personal tools (e.g., word processors, micro-computers, terminals, etc.), the largest share will be spent on the information infra-structure, (e.g., communications satellites and dish-antennaes, data bases, and millions of miles of fiber-optic communications lines, etc.). Beyond the next 10 years, investments to improve information productivity will increasingly shift to end-use applications, eventually incorporating many generalized tools (e.g., electronic networks, spreadsheet software, expert decision models, data bases, etc.) into single, comprehensive information systems that will essentially replicate 80% to 90% of the functions of a typical office operation.

The Service Sector: Low Value Jobs Keep Capital Investments Down

As has already been discussed in the economics section of this paper, service sector employment is expected to grow rapidly during the coming decade, as service enterprises expand to capitalize on the burgeoning supply of workers displaced by productivity improvements in other sectors. The ease with which service operations can absorb surplus workers is principally due to the fact that most service jobs involve common, ordinary tasks, such as cleaning, serving and general domestic functions. And, because service work involves mostly commonplace tasks, the economic value added by such work is relatively low. The low value of most service work diminishes the potential for automating such work, since the profits derivable from most services are insufficient to justify the high capital costs of automation.

Within this general context, however, there are some exceptions. The "fast food" segment of the food preparation industry, for example, has made extensive use of capital-intensive

mechanization to increase productivity, decreasing the labor intensiveness of restaurant operations, and reducing overall costs by about 15%. The marketplace success of this investment, however, was extensively driven by the rapidly rising consumer value for time, and the resulting 100% + growth in the demand for restaurant meals over the past 20 years. Characteristically, the amount of capital investment per service worker rises proportionately with the marketplace value of the services provided. Baggage handlers for inter-city bus and rail transportation, for example, are supported by little or no capital equipment, while baggage handlers in the air transport industry are heavily capitalized. Capital support within the service sector also increases in proportion with the specialized skill or knowledge of the service provider. Thus, airline pilots and surgeons are more heavily capitalized than stewardesses or orderlies.

In general, however, service work has a low potential for productivity improvement through capital investment. In fact, current capital investment projections for the 1980s indicate that, by 1990, the service sector will have become the least heavily capitalized sector in the U.S. economy, as record expenditures on info-com technologies lift the information sector out of "last place." To the extent that health care delivery may be fairly classified as a "service" industry, this constraint on capital-intensive productivity enhancement broadly applies. Of course, the large administrative component of health and medical services is essentially all information work, and as such, offers substantial opportunities for capital investment in office automation and management information systems to improve conventionally measurable productivity and cost-effectiveness. However, the maintenance of health and life is so much more intrinsically important than the functions of all other service providers that simple, commonplace criteria of cost-effectiveness are not entirely adequate to measure "productivity" in medicine and health care.

Over the past two decades, policy makers, economic analysts and the courts have increasingly been called upon to address the economic value of human life, and it is unlikely that this issue will be resolved in the near future. So long as there is no commonly agreed measure of the economic value of human life, health care providers will continue to be faced with capital investment decisions in which questions of cost-effectiveness will be inextricably intertwined with moral-ethical questions of the value of human life. It seems likely that, in the absence of a public consensus in this regard, health providers will be called upon to pursue *all* capital expenditures, no matter how high, if such expenditures have a demonstrated high probability for saving lives that otherwise would be lost. Unfortunately, while such expenditures will *increase* the *absolute effectiveness* of medicine and health care, they will also serve to *decrease* the industry's *measurable cost effectiveness.*

In view of the projected long-term capital shortage and the broad range of capital demands with which the nation will be confronted over the coming decade, medicine and health care will, like all other industries and professions, be forced to increase productivity at low capital costs. Unfortunately for the nation's health providers, marketplace demands for medical services which ultimately favor effectiveness over efficiency will make generally improved productivity more difficult to achieve in their field than in any other segment of the economy.

American Productivity Suffers Because Employee Knowledge Is Not Being Tapped

Collaborative Workplace Relationships: The Most Productive Social Technology

A substantial body of rigorous scholarly research strongly indicates that the principal productivity advantage that many Japanese and European firms enjoy over their U.S. competitors is the collaborative working relationship that exists between management and labor. More precisely, federally financed studies show that American organizations commonly suffer poorer productivity than their foreign counterparts largely because of the traditionally adversarial relationships between U.S. management and labor, which inspires little worker loyalty or commitment, *and which fails to tap the valuable experienced-based knowledge and insights possessed by rank-and-file employees.* Moreover, economic research has shown that this rank-and-file information resource—called "intellectual capital" by labor force analysts—is the single most important source of added value in all productive operations. In view of this, management practices which fail to derive the maximum utility from their employees' intellectual capital are doomed to sub-optimal performance.

The quintessential form of workplace collaboration is Edward Deming's concept of "Worker Design Teams," which the Japanese later renamed "Quality Circles." Basically, Quality Circles involve a formal mobilization of rank-and-file employees to channel their experienced-based knowledge and insights into managerial decision-making processes in a timely and pur-

poseful manner. Such inputs have repeatedly been shown to substantially improve product quality and reduce operating costs. Moreover, by giving rank-and-file personnel the opportunity to make substitute contributions to their work, these new collaborative management-labor relationships also serve to increase job satisfaction, with commensurate rises in employee commitment and loyalty, and significant declines in turnover, absenteeism, and grievances. Thus, collaborative workplace relationships promote increased productivity *both* by improving the quality of output *and* by improving human resource utilization.

An ample array of real-world workplace experiments have made it clear that Quality Circles are powerfully effective, so long as they are implemented with integrity. They have been used not only on the factory floor, but in the office, on police forces and in schools. Quality Circles have proven effective in redesigning office layouts, redrafting government procedures, and developing new curricula. Not only are they capable of improving the productivity of existing operations, but they are particularly effective in getting the maximum productivity out of new technologies. They have the advantages of other social technologies, in that they can be quickly implemented at low cost. Their only drawback is that they require employees and managers to abandon their traditional adversarial attitudes toward one another. Unfortunately, this is apparently so difficult a task that only about one-third of U.S. organizations that have experimented with Quality Circles report them to be highly effective. It is worth noting that, in spite of this mixed record of performance, the number of U.S. employers who use Quality Circles has grown from about 1,000 in 1980 to an estimated 8,000 in 1985.

In light of the universal imperative to improve productivity, plus the severe limitations upon productivity-enhancing capital investments in the health care delivery field, Quality Circles (QCs) do not represent merely an option for health care providers; they are an absolute necessity! Given their low capital cost and their high level of demonstrated effectiveness, QCs or "worker design teams" are the most powerful potential tools at the immediate disposal of any health care administrator. Moreover, in an industry which is certain to be confronted by a multitude of mandatory changes in technology, organization and procedure, the development of effective analytical skills among all rank-and-file employees is the best possible preparation for the optimal management of rapid innovation and adaptation. Regardless of what other policies or practices health care providers may adopt during the next 10 years, the failure to develop an institutionalized capacity for the effective management of change will almost certainly condemn the nation to decades of suboptimal, inequitable medical and health services. At a time when federal policy studies assert that the only way to reduce medical expenditures is to reduce the quality of health care, this is clearly the bottom line.

Worker Design Teams: the Health Care Administrator's Most Powerful Tool

While the development of analytically skilled employees offers immediate benefits of increased productivity, the long-term implications of such an initiative for health care providers are even more significant. As was previously asserted in the discussions of industrial and office automation, the long-range evolution of electronic production processes will be characterized by the creation of integrated information systems that incorporate data bases, software, and technical components that replicate broad arrays of commonplace operations and functions. In this overall process, the development of appropriate data bases and sound software will be the most costly and time-consuming task. The collection, analysis and structuring of real-world data typically represent 80% to 90% of *all* software development costs, while the actual programming represents only 10% to 20% of such costs. Since the experience-based skills and knowledge of rank-and-file workers are the principal source of value added by *all* productive operations (see discussion of "intellectual capital," above), such workers represent the best source of input for the development of effective data bases and software to replicate those operations.

By developing teams of analytically skilled employees throughout their organizations, health care providers will enable themselves to produce superior administrative and health promotion software more rapidly—and at lower costs—than competitive products created by commercial software vendors. Further, those institutions that move quickly to develop these in-house capabilities will be able to derive substantial added income from the sale of the health-related information products, systems and services which they provide. In effect, the adoption of "QCs" or worker design teams partially converts ordinary factory and service workers—and their supervisors and managers—into information producers. To the extent that the information generated by these employees either reduces the costs or increases

the revenues of their activities, such employees are—by definition—more productive. As this increased productivity is reflected in higher salaries, bonuses and royalties, the employers of such workers will be able to offer premium wages for even rank-and-file service jobs, thereby enhancing their ability to attract and retain quality personnel in a tight, high cost labor market. In addition, the creation of new "profit centers" of information products and services will offer new promotional opportunities that will relieve the problems posed by mid-career compaction.

In summary, by formally acting to tap their organization's intellectual capital, health care managers can substantially improve the productivity of their existing operations while preparing to optimally deal with the imperatives and opportunities posed by the inevitable forces for change that have been detailed in the first half of this paper. By mobilizing its human resources for purposeful information, an organization is not merely instituting a new labor-management relationship; it is also providing itself with a comprehensive framework by which it will be able to most effectively accommodate and exploit each of the new demographic, economic and technologic realities of the next 10 years. *Without this one innovation*, all other operational or managerial initiatives undertaken by America's health care providers during the coming decade will be considerably less effective than they could be, and many will prove to be ineffective or dysfunctional. In addition to enhancing operational and managerial initiatives, worker design teams can also serve to optimize innovative health care programs and services. But the selection of strategically sound programmatic innovations must be guided not only by considerations of operational efficiency and quality; they must also be guided by consideration of society's changing utilities and capacities, as millions of Americans adapt to new economic circumstances and technologic possibilities. The second half of this paper is devoted to an assessment of the social context of medicine and health care during the coming decade.

PART II
HEALTH CARE FOR AN ADAPTIVE SOCIETY

At the beginning of this century, the first great modern futurist, H.G. Wells, put forth a basic model for projecting "things to come." Wells asserted that future is principally shaped by society's adaptation to changing economic and technological realities. This notion may be difficult for some people to accept because most of us have been taught that people *don't* like change. We are repeatedly advised and counseled that, "One of the hardest things you'll ever have to do as a manager is to get people to accept change." Consultants make 6-figure incomes teaching seminars on how to manage change. Professional conferences and training programs routinely feature sessions on "The Effective Management of Change." And most of us have our own personal "war stories" about employee resistance to change.

The interesting thing about all of this conventional management "wisdom" is that the literature of the social and behavioral sciences tells us a considerably different story about people and change. Basically, it tells us that people like change, and that they initiate change in their lives all the time. In 1982, for example, social surveyor Daniel Yankelovich reported that 40% of the U.S. adults he surveyed indicated that they were currently going through a major, self-initiated change in their life or career, and that another 40% were actively planning to undertake such a change. None of this sounds very much as if people dislike change. So, the first question to ask here is, who is right; the managers or the social scientists?

The answer is that both are right. In general, people frequently initiate changes in their lives, and pursue such changes energetically. But, in the context of an *organizational environment*, an individual's propensity to change declines significantly. Since it is in this organizational environment that most executives and administrators have professionally dealt with people and change, their personal experience is that people typically don't like change. However, in a very real sense, it is organizations that resist change, *not* people.

In a Very Real Sense, It is Organizations, Not People, That Resist Change

Outside of organizations, in the day-to-day world of social and economic life, each person is more or less free to act as an individual. Whenever we are presented with a choice—an opportunity or a threat—we individually decide on the best course of action for ourselves within the limits of our circumstances, resources and abilities. For most of us, to make even a major personal decision generally requires us to get the agreement of only one other person—our spouse.

Within an organization, however, most significant decisions require us to secure the agreements of a number of people, many of whom have to get agreements with still more people before they can agree with us. It is the

collective nature of the decision-making process within organizations that makes them resistant to change, not merely because it is slow, but also because it often requires people to take actions or accept externally imposed conditions—i.e., to make changes—that are not necessarily beneficial to them.

When Do People Initiate Personal Change?

Basically, people change when they perceive that a change will be beneficial to them. Of course, life is not quite that simple. Change implies innovation, and innovation involves uncertainty. Uncertainty, by definition, involves risk, and most people try to avoid risk. Even when their immediate circumstances are not satisfactory, people are frequently reluctant to even try to change their circumstances for the better, because there is always the possibility that a change may, in fact, make their situation even worse. Folk wisdom advises us, "Better the devil you know than the devil you don't know!"

Even if change could be made "risk-free," it would still routinely involve personal commitments of time, money and psychic energy. Since each person has only limited amounts of these resources at his or her disposal, people are not so change-prone that they will pursue every opportunity for potentially beneficial innovation that comes along. Indeed, a summary of behavioral research findings indicates that people are quite selective about the changes they undertake. Specifically, the social sciences tell us that there are five factors which govern the propensity of people to initiate significant change in their lives (*Table 1*).

Certainly it is useful to know *when* people are likely to change, but it would be even more helpful to know *why* they change. This is a more difficult question. People are not perfectly rational. Their decisions are powerfully shaped by factors of individual personality, perception and emotion. It is hard to find a universal criterion by which we can measure the collective rationality of society. "Money" is a convenient universal measure of social behavior, and indeed, the social sciences do provide us with useful models for explaining such economically driven changes in collective behavior as national birth and marriage rates.

But money, as they say, isn t everything. Nor does it explain everything. Just because more people get married during good economic times than during poor times still doesn't tell us *why* they get married. Money is a good universl measure of social behavior only because it has broad social utility: money can be converted into a wide range of goods and services that can mean survival, security or frivolity. To construct a really helpful model of how social change is likely to shape the next 10 years, we need a more meaningful measure of social utility than money.

TABLE 1
When Do People Initiate Personal Change?

1. *When the change is perceived as inevitable.* (For example: "Sooner or later, I've got to go back to school," or, "One of these days, we're going to have to buy a computer.")
2. *When the benefits of the change will be quickly realized,* usually within 12 to 18 months.
3. *When the means of change is readily available*; generally, this means "in the marketplace."
4. *When the change can be comfortably integrated with other basic, ongoing, aspects of daily life and work.*
5. *When the risk of change is reduced by some form of insurance, back-up, sharing or surplus resources.*

Components of the Quality of Life

Since the mid-1960s, social commentators have often used the phrase "quality of life" to designate the universal social utility. In the late 1960s and early 1970s, the Rand Corporation, under contract to the U.S. government, studied the "quality of life" (Q.O.L.) concept to determine if there were a commonly held set of measurable characteristics by which most people assess the quality of their lives. Based upon in-depth surveys of selected populations, the study concluded that there was, indeed, such a set of factors (*Table 2*). This research further determined that earlier U.S. studies, along with research in other cultures, had identified similar sets of commonly held

TABLE 2
Components of the Quality of Life
(In Rank Order of Rated Importance)

1. Health
2. Status
3. Affluence
4. Meaningful Activity and/or Relationship
5. Sociability
6. Freedom
7. Security
8. Novelty/New Experience
9. Dominance/Aggression

social utilities.

It should be noted that more recent surveys show that, especially among those under 35 years of age, "Meaningful Activities and Relationships" are now consistently ranked as the third most important Q.O.L. factor rather than the fourth. It is also worth noting that "Novelty and New Experience" are commonly seen as fundamental components of the quality of life. That should put to rest, once and for all, whether or not people like or want to change. Indeed, in the Rand studies, people said that "change" is an essential ingredient for a good quality of life.

This sort of scholarly listing does provide a more specific sense of commonly held social utilities which would motivate change in the collective behavior of society. But, for many people, these factors are still not specific enough. After all, the concept of "status" is extremely subjective; one person's high "status" job, for example, may be quite different from another's. National attitude surveys and opinion polls, while academically less rigorous, *do* provide a more definitive set of generally held social utilities. In surveys conducted in the United States during the 1970s and early 1980s, 75% or more of the respondents consistently agreed with the statements shown in *Table 3*.

TABLE 3
What Do Americans Say They Want Out of Life?
(Shown in Descending Order of Frequency)

1. People want more control over their own lives and of the destinies of their families.
2. People want opportunities to learn and develop throughout their lives.
3. People want meaningful work, roles and relationships.
4. People want to participate in and actively experience life rather than watch other people do things.
5. People want challenges to their creative or problem-solving abilities.
6. People want to live and work among open, happy, trusting people.
7. People *do not* want to be unwillingly or unwittingly jeopardized.

What Do Americans Say They Want Out of Life?

For many people, *Table 3* reflects a more satisfying list of commonly held desires (i.e., social utilities) than *Table 2* offers. Actually, the two lists are not contradictory, and both can be helpful in understanding social change. Certainly, every executive, planner and manager would do well to consider these lists carefully when evaluating his or her own organizational environment. These expressed values are also important guides to understanding how to motivate people, how to reward them, and how to get them to change. Since research shows these to be widely held values in the general public, they are almost certain to be prevalent among most employee populations.

The growing popularity of health maintenance organizations (HMOs) as an alternative to pure fee-for-service health insurance plans reveals the practical marketplace implications of these social utilities. *Table 2*, for example, indicates that people feel "good health" is the single most important contributing factor to the quality of life. Moreover, by remaining healthy, an individual clearly maintains a tangible measure of the most important social utility in *Table 3*: i.e., "control over one's own life."

Of course, there is plenty of information available in books, magazines and the broadcast media on how to stay healthy, but there is also considerable disagreement over the actual utility and reliability of much of that information. Thus, there is some personal "risk" involved in an un-informed individual's adopting one particular diet or one particular form of exercise. But, by joining an HMO, the information-consuming individual is adopting a health promotion strategy that is "available in the marketplace" (Factor 3, *Table 1*), *and* that "reduces the risk" of adopting the wrong pro-health lifestyle (Factor 5, *Table 1*). HMOs, of course, also generally reduce health insurance premiums paid by both the employer and the employee, *and* they boost employer productivity by reducing absenteeism. Small wonder that health care experts expect HMOs to capture the bulk of the health insurance market within 10 years, in view of the multiple social and economic utilities that these institutions serve.

Information as an Agent for Change

Thus, social science can provide us with some fairly straightforward statements about when and why people are likely to change. However, to fully understand the ways in which social adaptation may shape the near-term future, we still need to know *how* people are likely to change. This is an even more difficult question to answer than "why" people change. In small, tribal societies, cultural rituals are so strong and options so constrained that anthropologists can predict with considerable accuracy how a society is likely to deal with a specific future development. But, in a culturally and economically diverse society, the variety of individual circumstances combined with the diversity of individual personalities is so complex that it is not possible to predict collective social behavior with much precision.

There is evidence, however, that a large portion of U.S. society—one study estimates 70%—actively considers the future implications of a decision before they make it. Other studies suggest that at least half of the adult population gathers information about

decisions from outside their immediate circle of family and close friends. Public surveys indicate that these people get their additional input through the media, with television having recently surpassed the newspapers as the public's principal source of news. (The majority of the public still depends on newspapers for their analysis of the news, however.) In addition to TV and newspapers, books, radios and magazines are also major sources of decision information. The rapid commercial success of the "all news" radio and television formats, and the unprecedented growth in the sales of self-help books over the past 10 years must all be regarded as significant measures of increasing information input to social change. And it is through this input that at least half the U.S. adult population gathers the information that tells them which changes are going to be inevitable in their lives, and how to keep healthy, and what actions may jeopardize their future.

Of course, we all read the paper or watch a newscast with a special sensitivity to things that are of immediate personal relevance. From the standpoint of anticipating future social change, however, it is important to keep in mind that tens of millions of Americans are all gathering information the same way. Since it is not possible to monitor the conversations of an average sample of the population getting advice from their relatives and friends, the best insight concerning society's future collective behavior can be achieved by monitoring the decision-informing input that society gets through the media. There is powerful marketplace evidence that people take many significant actions, including adaptation and innovation in their lives, based upon the input they receive through this information environment.

Increased Information and Education Will Result in More Sophisticated Consumers

The Statistically Literate Society

In forecasting what the future adaptive society would be like, H.G. Wells once wrote, "There will come a time, in the fourth quarter of the 20th Century, when it will be necessary for the citizens of a democracy to be statistically literate." This would be true, Wells argued, because the world would have become so complex that people could no longer rely solely upon personal experience, plus their close circle of relatives, friends and colleagues to provide them with sufficient reliable information to enable them to make the right decisions in the voting booth, in the marketplace, and in their lives.

Today, we are in the fourth quarter of the 20th Century, and the evidence suggests that a large measure of us are, to a significant degree, statistically literate. During the 1970s, the Barron-Kelso studies of adult functional competency indicated, for example, that about 40% of the population is able to consistently make correct shopping decisions in mixed-measure price comparisons of grocery items, and that another 30% made the right choice more often than not. Moreover, given long-term, year-to-year increases in average levels of education, it is reasonable to assume that the level of statistical literacy will continue to rise. Given *both* society's propensity to use information in making its decisions *and* its increasing ability to use sophisticated information, ongoing growth in the production and public use of information has powerful implications for future rates and directions of change in society. Driven by the increasing flow of information and rising levels of education, the next 10 years will inevitably see a continued growth in the underlying, data-driven, socio-political developments of the past 20 years: consumers will be more sophisticated. Less and less will people rely solely upon their own personal experiences and their immediate peer groups for their decision-information.

More Informed Consumers

Pollster Louis Harris has found that, while consumer concerns over the high price of goods has begun to decline with the slowing of inflation, concern over the *quality* of goods and services is rising. While this concern may ultimately evolve into a new wave of pressure for consumer protection legislation, it also reflects an immediate market for more information about actual or vendor performance, frequency of repair rates, honoring of warrantees and quality of service, etc. Given long-term trends toward increased commercial production of such user information, it is only a matter of time before entrepreneurs will be marketing performance evaluations on most products and services, including the performance of specific medical and health care providers and products! If entrepreneurs do not provide such performance information on this most important and costly consumer service, the public is likely to secure this data through legal and/or political action.

More Knowledgeable Voters

During the 1970s, business and industry became increasingly sophisticated in mounting slick media blitzes to turn back hostile voter initiatives at the state and local levels. In most cases, these have been Pyrrhic victories; battles won in wars that have been—or ultimately will be—lost. The en-

vironmental, consumer protection and worker protection movements of the 1960s and 1970s were not temporary aberrations that will fade as the Baby Boomers shift from a "radical" youth to a more "conservative" middle age. These values are based upon new, widely held understandings of how the world works, and they have now become a part of our mainstream culture. Attitude surveys consistently show that 75% to 85% of all Americans support rigorous environmental protection, while 60% to 70% feel as strongly about consumer and worker protection. (As noted in *Table 3*, people don't want to be "unwillingly or unwittingly jeopardized!")

Meanwhile, as for the original Baby Boomers, certainly they will be less likely to take to the streets than they were in their teens and twenties in order to secure what they perceive to be their rights and entitlements. But their values and perceptions will continue to be reinforced by the steady flow of new information about the environment, consumer protection, and health and safety. *And, as people grow older, their propensity to vote goes up!*

Society and Computers: The Great Confluence

Industry first became America's largest employer in 1906. A major reason for the surge in industrial employment was the tremendous public demand for a new manufactured product that had been introduced that year. That product was the electric washing machine, and U.S. consumers loved it! In fact, household expenditures on washing machines in 1906 were so great that, for the first time in American history, the capital investment rates of the U.S. domestic sector exceeded those of business. What's more, as U.S. industry turned out more and more sophisticated consumer durables (automobiles, refrigerators, TVs, etc.), the capital investment rates of America's households continued to be higher than commercial capitalization rates for every year except during the two World Wars.

The ultimate consumer market triumph of American industry was the effective "mass production" of houses to meet the post-World War II boom in new family formation. With the rapid rise in home ownership, household capitalization rates increased even faster than before the war, and by 1956, the value of the domestic sector's accumulated assets surpassed the value of all business assets for the first time. And, since household capital investment rates have continued to outstrip those of business and government, the domestic sector's assets today represent roughly 38% of America's national net worth. By comparison, business owns about 31% of the nation's total assets, and government at all levels owns 22%. Agriculture represents about 9% of America's assets, about two-thirds of which are also owned by households.

To the distress of the nation's businesses and commercial bankers, since the coming of the industrial age, Americans have consistently had a much higher propensity to spend their money on capital goods than to put it into savings. There is no reason to believe that this 80-year trend will be reversed during the coming decade, in spite of tax policy incentives to increase the society's propensity to save. Given this prospect, the personal computer looms large as the potential "electric washing machine" of the 1980s and 1990s. This is particularly true in light of the recent rapid growth in society's use of information.

Current expert forecasts and marketing surveys agree that 50% of U.S. households will have home computers by 1990, and 60% to 65% by 1995. While the sales of home computers and software are expected to produce annual consumer sales in the tens of billions of dollars, the most important consequences of the domestic sector's new capital investments will be the ways in which society uses these new tools. If we are looking for ways in which special adaptation will tangibly shape the future, the confluence of America's information-consuming households with the rapidly growing electronic info-structure will clearly offer compelling opportunities for accelerating current trends in adaptive behavior and for facilitating even further social innovations on a broad scale. If we consider the social utilities and the dynamics of societal adaptation described in the preceding pages, it would be hard to imagine a set of circumstances more conducive to rapid, sweeping change.

Forecasters Say 65% of U.S. Households Will Have Home Computers by 1995

As has already been noted, education is about to become the nation's largest industry, on the basis of the almost certain need to train or retrain 40 to 50 million adults. While this need has now been generally recognized by the nation's leadership, suitable actions to respond to this reality are only just now being debated, and an actual set of policies and programs may not be put in place until the late 1980s. But, while the nation's leadership searches for a consensus approach to the growing need for re-training, the nation's work force is also becoming more aware—through their information environment—of this imperative in their own lives. And, without waiting

for action by government, business, labor or education, literally millions of Americans are already making substantial investments in their own intellectual "re-tooling."

Today, over 50% of the 12 million students in U.S. colleges are adults, up from 40% just five years before. An additional 16 million adults are enrolled in other vocational or educational programs, and the proprietary training business is booming. But, whatever the ultimate political resolution of the worker training issue, the projected shortage of capital discussed earlier in this paper will substantially constrain any effort to meet these huge, diverse educational requirements through the traditional "teacher-classroom-textbook" delivery system. In anticipation of this reality, established universities and new businesses are already offering electronic curricula covering hundreds of subjects over telephone lines accessible 24 hours a day by computer terminals in the home and office.

Given the relatively high cost of long-distance computer networking during the remainder of this decade, however, experts commonly expect another computer learning option to become the principal delivery made for electronic education during the next 10 years: i.e., personal micro-computers using educational software. Based on current sales trends, market forecasts now show that educational software will become a $1 billion per year industry by 1987, and will surpass all textbook sales before the end of the decade. Already, over 6,000 educational software programs are on the market, with 100-200 new products being introduced each month. Most important of all, a growing share of these products are being purchased by individuals and households, who are now expected to account for more than 75% of all educational software sales by 1990.

The rapidly emerging electronic education market is a classic example of social adaptation to economic realities and technologic capabilities. While professional educators, public officials and community leaders throughout the U.S. pursue the slow and cumbersome institutional decision process for setting new priorities, assigning responsibilities, reforming curricula, evaluating alternate technologies, and resolving shortages of funds and critical teaching skills, society is moving as quickly as it can *on its own* to accommodate the inevitable changes which people foresee in their own lives. In so doing, they are also positioning themselves to be able to take over an even larger share of the educational function in the future, if the institutional sector should fail to develop a timely, coherent response to post-industrial realities.

Electronic Health Delivery

While the rise of education to become America's largest industry will be fueled by the skyrocketing demand for worker retooling, it will also be aided by the slowed growth of medicine and health care—currently the nation's largest industry—after 25 years of unprecedented expansion. Given the extremely high value our society places upon good health, (*Table 2*), it is perhaps not surprising that Americans were willing to tolerate a 500% rise in medical costs over the past quarter century. But, for the last decade, there has been mounting popular and political pressure to "contain" the explosive growth in health care expenditures. Parallel to this concern over medical costs, social statistics have begun to reflect sharply improved health and life-spans in the U.S., *which research has increasingly linked to voluntary changes in lifestyles by millions of Americans over the past 20-30 years.*

Lifestyle Changes to Improve Health Are Linked to 'Consumption' of Information

Specifically, the U.S. Surgeon General and the American Heart and Lung Associations have published research findings which show that substantial reductions in death rates from all forms of cerebro-vascular and cardio-vascular disease during the past 20 years—including a 45% drop in heart attacks—has been almost entirely attributable to dietary changes, increased exercise and reductions in smoking by millions of Americans. The Surgeon General has also cited life-style changes as the principal reason for the six-year increase in average U.S. life-expectancy during the past two decades. This same research has shown that costly new medical technologies and health-care delivery systems have been directly linked to only a minor part of the recent improvements in the nation's health!

The striking reality behind this data is that literally tens of millions of Americans, through their "consumption" of information, have tangibly altered their life styles to improve their health far more than the health care industry did, *and at a fraction of the cost!* What's more, the 1979 Surgeon General's report presented the conclusions of broad scale research showing that a person's life-style is the principal determinant of his or her health and longevity. In fact, life-style and physical environment—both factors that are largely under a person's own control—represent 70% of the variables affecting an individual's wellness, while medical intervention represents

only 10%.

As with education, there are enormous implications for health care providers in the impending confluence of the adaptive society with the new electronic info-structure. There are already more than 2,000 health promotion software packages in the consumer market, and 30 to 50 more appear each month. The U.S. Public Health Service now publishes a monthly newsletter, *Healthfinder*, reporting on new health promotion software. The sales of such software are projected to reach $1.8 billion by 1990, and to be augumented by comparable sales of home health equipment and health-related videodiscs and cassettes. Custom-built diagnostic peripherals for microcomputers already exist in research institutions which will provide astonishing capabilities for new home health monitoring products. Private sector R+D is already producing marketable systems for the automated remote delivery of time-critical medications. As the Congress wrestles with hospital cost containment legislation and reduces Medicaid payments, government experts have asserted that "the only way to cut medical costs will be to reduce the level of health care." But an adaptive, information-consuming society, equipped with a powerful array of electronic health monitoring and diagnostic devices, is very likely to prove such forecasts wrong. Just as society has already begun to reduce its dependence on the institutional education system, society has also already begun to significantly reduce its use of, and dependence upon, the huge and costly institutional health care system. This, in turn, will require dramatic adjustments in the organizations and the professions that work in America's largest industry.

America: Two-Thirds of an Information Society

Society's surging investment in its own electronic info-structure is not a mass-market "fad," but a matter of practical utility. Underlying these investments are the inevitable forces for change that were detailed in Part I of this paper: i.e., needs for adult education, the pursuit of better health and lower medical costs, and the continued rise of information work, especially as reflected by the opportunities of increased self-employment and flex-place work arrangements. On the basis of just these few powerful social utilities, a large base of actively used home computers will be created in the next four to five years.

This base of 20 to 25 million households will represent a sufficiently large national market that it will attract literally millions of new information products and services that will further broaden the general public's utility for home computers. This increased utility, in turn, will essentially double the immediate market for home computers to the extent that they will represent attractive investments for an estimated two-thirds to three-fourths of all U.S. households by the mid-1990s.

A potentially volatile feature of this new electronic info-structure will be its capacity to permit the rapid mobilization of new constituencies. Just as the CB radio permitted the nation's truckers to mobilize rapidly during the gasoline crises of the 1970s, electronic information networks will essentially pose the same potential for practically everybody during the next 10 years. Unhappy customers, clients, constituents, and patients alike will be able to seek each other out within a matter of hours, and to use computer conferences to share information, to determine common interests and develop action plans. "Ambulance-chasing" lawyers will promote their services through such networks. "Temporary" national lobbies and associations will appear overnight, only to disappear within a few weeks or months, once they have achieved their objectives. Conversely, existing organizations, such as professional societies and trade associations will be able to mobilize their members and their information in order to develop effective responses to new outside initiatives.

Meanwhile, as two-thirds to three-fourths of America's households actively enter into the age of electronic information, the remaining one-fourth to one-third are likely to stay behind. This segment of our society already has a low propensity and low capacity to use information productively. The 1979 Barron-Kelso studies, for example, found that 25% to 30% of U.S. adults were incapable of handling simple arithmetic problems involved in shopping, nor could they fill out a job application form. Adult educators refer to this segment of our society as "functionally non-competent." Social commentators increasingly call them "the information have-nots."

Over the next 10 years, as the majority of Americans actively improve their lives through the application of information to their purchasing, investing, learning and living activities, the non-information-consuming portion of the population will gradually lose ground on their "statistically literate" neighbors. By the early 1990s, social indicators will begin to reveal real measures of deteriorating social and economic performance among the "information have-nots," including declin-

Electronic Networks Will Allow Patients to Locate Each Other and Share Information

ing income, below average health, and increased economic dependency rates. Like the problems of deteriorating urban infrastructure, the problem of the "information have-nots" will not go away by itself. It will require massive public sector intervention in a manner not yet devised—*or even seriously addressed.* And, like the other great imperatives of this decade of change, if it is not dealt with, it will pose looming problems for the long-term future, in the form of a large and permanently dependent underclass.

Summary and Conclusions

At the outset of this paper, it was argued that the essence of strategic action is to "exploit the inevitable." With this model as the central rationale, the remainder of the paper presented a synopsis of the inevitable forces for change in the near-term future operating environment of the medical-health care industry and professions. These forces for change were presented in two groups or "sets." The first set of changes were those projected by rigorous mathematical or expert forecasting techniques. The second set of changes are those which are "inferable" from historically based models of social adaptation to change. Of the two sets of projections, only the first can be regarded as meeting rigorous tests of reasonable certainty. Just as the available econometric models do not permit us to forecast economic performance beyond 90 days, our socio-metric models do not permit us to accurately project collective social behavior beyond the immediate future. Such models do, however, serve to inform our assumptions and speculations about future social change, and as such, are extremely important to all institutional planners, especially those in health and medicine.

All institutions are servants of society. Societies create (i.e., enable or empower) institutions because institutions are able to perform functions which individual members of society cannot perform by themselves as well, or at all. To the degree that institutions are effective servants, society sustains them in the marketplace and in the voting booth. And to the extent that an institution is ineffective, or loses effectiveness, society will seek other institutional servants which are more effective. It is in this context that the model of social adaptation assumes crucial importance in the development of optimal strategies of long-term commitment and investment for medicine and health care in America today.

Clearly, the projections of demographic, economic and social change contained in the first half of this paper must be accommodated by the *operational plans* of health care providers if those plans are to be strategically sound. But, in order for the *programatic plans* of health care providers to be strategically sound, health care planners must regard the model of social adaptation presented in the second half of this paper as their best guide to sustaining and increasing the American health care system's effectiveness as an institutional servant. Basically, this means that planners must think about developing programs and product lines, and about adopting organizational and technological arrangements, that will best serve the needs of a society which, within the next 10 years, will have evolved radically from the society which the current health care system was originally designed to serve. America's current health care system, originally designed to serve an industrial society, must now transform itself to serve an information society.

Only by serving *both* economic *and* social utilities can an institution sustain itself as an effective social servant. It is not enough, for example, to demonstrate that home health care is more cost-effective than hospital care for long-term convalescent and custodial patients. It is also necessary to demonstrate (as attitude surveys *do* show), that a significant proportion of society desires the opportunity to provide such care. Wherever such confluences of economic and social utility for a specific innovation or change occur, the good institutional servant has a powerful opportunity for strategically sound action.

In the example of home health care, however, as with all strategic assessments, health care planners must consider the potential exploitation of this apparent opportunity within the larger context—and the longer time frame—of general social adaptation to multiple forces for change. Basically, this means that home health care should be evaluated not merely as a service to the current society, but also to a society in which one-fourth to one-third of all gainful employment will be done in the home. Home health care should be envisioned in a population where other social utilities have led two-thirds to three-fourths of all households to purchase computers—and to use them in a wide array of daily functions. And finally, home health care must be envisioned in the context of a burgeoning array of increasingly sophisticated remote diagnostic capacities and home health care delivery technologies. In fact, when assessed within the comprehensive environment of the knowable future, home health care shifts from being merely a potential opportunity to a compelling necessity for those providers of medicine and health services who wish to remain good institutional servants to our adoptive society in a decade of change. Ultimately, it is only by assessing *all* of their options and alternatives within this same long-term social context that health care providers will be able to identify the appropriate range and mix of innovations and adaptations which, taken together, will assure that America will continue to be effectively served by a high quality, efficient and equitable medical and health care system through the trans-industrial revolution, and beyond.

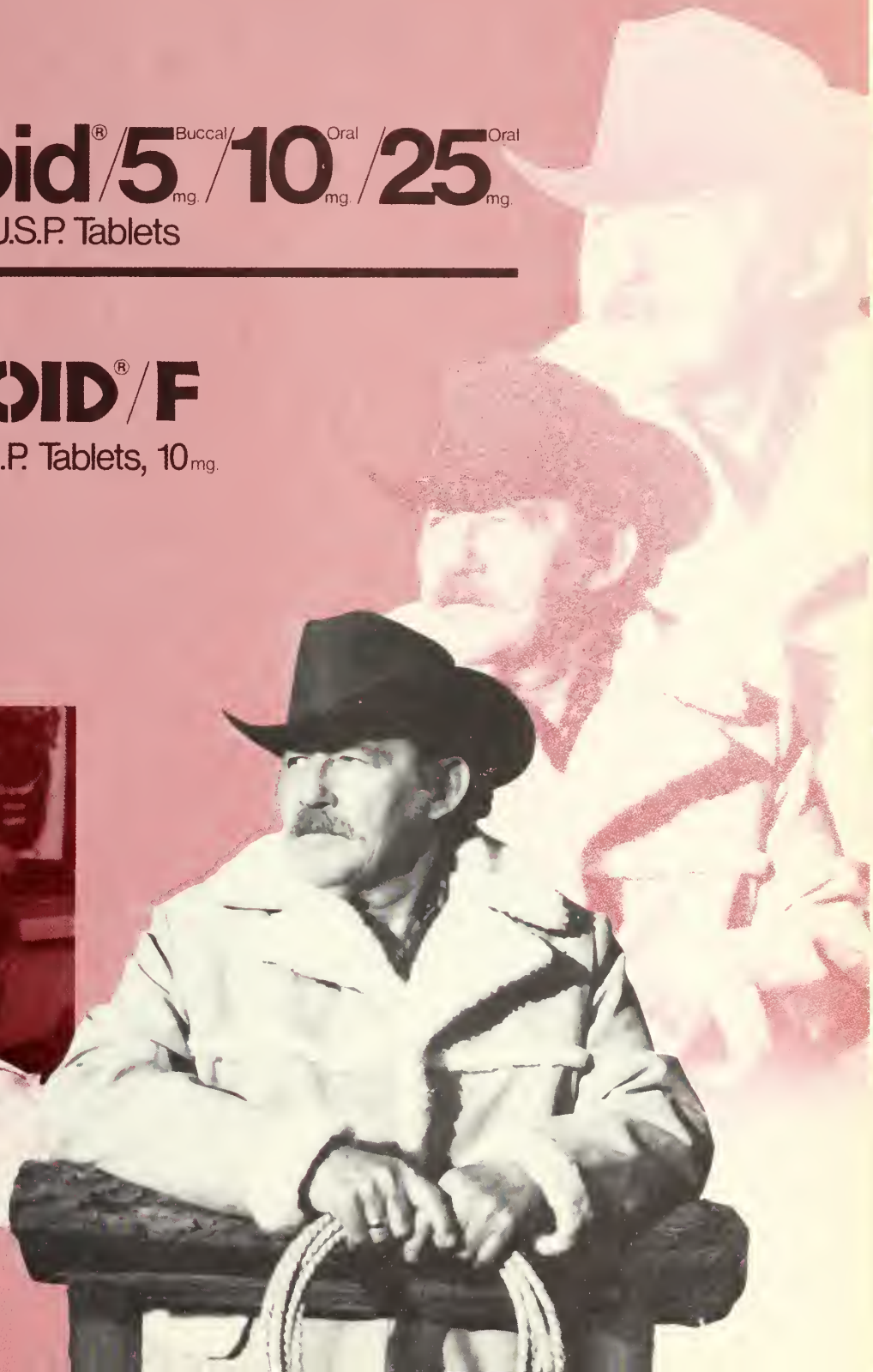
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AUXILIARY REPORT

Anne Throop, Indianapolis
ISMA Auxiliary President 1987-88

Among the outstanding and innovative projects of the county auxiliaries this year were:

- Project Lifeline, a direct telephone line between the home and hospital for the elderly or seriously ill by Clark County.
- Support by Marion County for over-night accommodations to help families of hospitalized children at the Ronald McDonald House in Indianapolis, by Delaware-Blackford for the Hospital Hospitality House in Muncie, and by Allen County in the three Fort Wayne Hospitals.
- The purchase and use of the ISMA video series "Healthy, Happy, and Wise" in programs for the elderly by Knox, Vigo, and LaPorte County.
- A pediatric orientation program in St. Joseph County for children before surgery.
- In Grant County, a puppet show, "Kids on the Block," that deals with handicaps, taken into the schools by auxilians.

What are the fun ways of auxilians raising funds to meet their many goals?

- In Lake County-Southlake, by an International Night Dinner Festival and Talent Show, highlighting the ethnic background of their group.
- In Owen County-Monroe, by a "Golden Evening Reception" in the newly renovated Court House followed by dinner parties in over 20 homes to raise over $30,000.
- In Knox County, by an annual charity ball, this year with a Mardi Gras theme, to raise over $8,000.
- In Allen County, by a "Hot and Chili Night in May," with a physician-organized jazz band, "Frankie and the Bananas," for their Three Rivers Clinic for the indigent.
- In Wabash County, a two-day bus shopping trip to Chicago to support their infant car seat loan program.
- Others include a Day at the Races in Floyd County, a garage sale in Wells County, a Christmas Festival of Trees in Elkhart County, a downtown community luncheon-style show in Wayne-Union, a style show raffle in Lake-Hammond, and an annual geranium sale in St. Joseph.

In Delaware-Blackford Auxiliary, the legislation chairman started a study group, which met weekly for several months. They learned about the legislation process, studied specific bills, wrote to their legislators, and visited the General Assembly.

Another excellent program idea by the legislation chairman in Howard County was a political forum to acquaint auxilians with the political issues and with candidates for the U.S. House of Representatives, the State Senate, and the State House of Representatives.

One of the goals of the ISMA Auxiliary this year was to promote and support the AMA and the ISMA goal of a Tobacco-Free Society by 2000.

The Delaware-Blackford Auxiliary accepted this challenge by promoting the American Cancer Society's Great American Smoke Out by taking their materials into the elementary schools and by working with two local physicians who presented a program in the schools showing the hazards of tobacco with films, costumes and skits. They also circulated the petition from the Indiana Coalition for a Tobacco-Free Society and are supporting a Ball State Health Science professor in his efforts to establish a local coalition.

The Shelby County Auxiliary also accepted this goal by having an exhibit booth promoting "No Smoking" at the annual community health fair; Elkhart, Noble-LaGrange, Shelby, Marshall-Starke and Lake-Southlake Auxiliaries took the AMA Auxiliary anti-smoking posters "Ashes to Ashes" around the community for display.

Among the outstanding auxiliary programs of the year were:

- "Adapting to the Medical Marriage" by John Henry Pfifferling at the Allen County Medical Auxiliary Medical Society Meeting.
- "Chemical Addiction-a Family Affair" by a doctor's spouse who spoke from her own experience at the Elkhart County Medical Auxiliary.
- "Women and Stress" by an IU-PU professor in the Bartholomew-Brown Auxiliary.
- "The Impaired Physician" by an auxilian in the Tippecanoe County Medical Auxiliary.
- A French food demonstration at the Vanderburgh-SW Medical Auxiliary by a medical auxilian of the Knox County Auxiliary.
- The Richmond "Arboretum" in the Wayne-Union Medical Auxiliary.
- Coping with peer pressure-teenage drug and alcohol programs by a speaker from the school in Fayette-Franklin Medical Auxiliary.
- A program on photography by a male auxilian in Howard County.
- "A Crash Course on Recent Financial Trends" in Lake County-Southlake.

The 36 county auxiliaries in Indiana vary in size from seven to 455, and have a total membership of 2,676, including 33 members at large in counties where there is no organized auxiliary. For the first time in several years, membership increased by 151 members. Indiana auxilians, by their checkbooks and by varying degrees of involvement, are supporting their physicians through their county, state and national organizations.—**Alfrieda Mackel, Immediate Past President**

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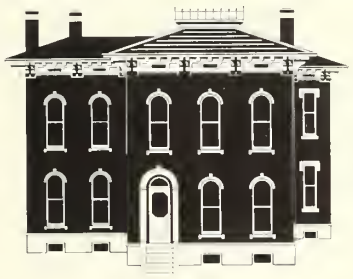
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All diplomates of the ISMA are invited to enter a professional card in the *Directory*.

CME QUIZ

TO OBTAIN ONE HOUR OF CATEGORY 1 AMA CME CREDIT, answer the following questions by circling the correct answer on the answer sheet below. Complete and clip the application form and mail it to: Indiana University School of Medicine, CME Division, BR 156, 1226 W. Michigan St., Indianapolis 46223.

Family Adaptation

CONTINUED FROM PAGES 623-632

1. The following statements are true about bereaved children except
   a. The manifestations of grief do not differ from those in adults.
   b. Some bereaved children show no outward sign of grief.
   c. The child's behavior may be misinterpreted as inappropriate or uncaring.
   d. The bereaved child may demonstrate persistent somatic or behavioral symptoms.

2. Care of the bereaved child should, if possible, ensure the following, except that
   a. The child needs to be told of the death by a familiar person.
   b. He should be told that the parent went to sleep.
   c. If possible, the child should not be moved.
   d. An effort should be made to have one primary caregiver.

3. "Red flags" that suggest the need for mental health help for a bereaved child include the following, except for
   a. Suicide gestures or attempts.
   b. Unremitting guilt and self-blame.
   c. Delinquency.
   d. Wish to talk and ask questions about the deceased.

4. In relation to the funeral of a parent, the following advice may be given except that
   a. The child should be accompanied by a close relative or friend.
   b. The service should be conducted with the child's needs in mind.
   c. The child should be forced to attend the funeral even though he does not want to.
   d. Many children under six years of age are too young to attend.

5. After the death of an infant, the following steps are helpful to the parents, except for
   a. Prepare parents for the grief symptoms they will experience.
   b. Suggest how to tell the sibling about the death.
   c. Suggest another pregnancy.
   d. Advise the parents to talk to each other about the child.

6. The following statements about the child's reaction to divorce are true except
   a. Children lack the cognitive ability to understand the meaning of divorce until they are nine to ten years of age.
   b. Many young children believe the divorce was their fault.
   c. Most children hope that a reconciliation will not occur.
   d. The child's wish to turn the clock back indicates failure to master the experience.

7. Parents' reactions to the divorce include the following except that
   a. Most do not think sufficiently about the impact of divorce on the children.
   b. Few associate the divorce with symptoms that develop in the child of divorce.
   c. Most encourage questions from the child.
   d. There is often a "moratorium" for parenting after a divorce.

CONTINUED ON PAGE 696

JUNE CME QUIZ Answers

Following are the answers to the CME quiz that appeared in the June 1987 issue: "Septic Arthritis . . ." by Steven Hugenberg, M.D., and Kenneth D. Brandt, M.D.

1. d	6. e
2. c	7. a
3. b	8. c
4. d	9. b
5. c	10. c

Answer sheet for Quiz: (Family Adaptation)

1. a b c d	6. a b c d
2. a b c d	7. a b c d
3. a b c d	8. a b c d
4. a b c d	9. a b c d
5. a b c d	10. a b c d

I wish to apply for one hour of category 1 AMA Continuing Medical Education credit through the I.U. School of Medicine. I have read the article and answered the quiz on the answer sheet above. I understand that my answer sheet will be graded confidentially, at no cost to me, and that notification of my successful completion of the quiz (80% of the questions answered correctly) will be directed to me for my application for the Physician's Recognition Award of the American Medical Association. I also understand that if I do not answer 80% of the questions correctly, I will not be advised of my score but the answers will be published in the next issue of INDIANA MEDICINE.

Name (please print or type)

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To be eligible for this month's quiz, send your completed, signed application before Aug. 10, 1987 to the address appearing at the top of this page.

NEWS NOTES

New ISMA Members

Koorosh Banayan, M.D., Chicago, anesthesiology.

Sean P. Boyle, M.D., Elkhart, family practice.

D. Craig Brater, M.D., Indianapolis, internal medicine.

Hyacinth B. Chin-Sang, M.D., Beech Grove, nuclear medicine.

Michael W. Conway, M.D., Seymour, family practice.

Thomas J. Fischer, M.D., Indianapolis, hand surgery.

Jerry H. Fletcher, M.D., Indianapolis, child psychiatry.

Gerald A. Griffin, M.D., Indianapolis, anesthesiology.

Gregory E. Heaton, M.D., Madison, pathology.

Kean A. Kamman, M.D., South Bend, anesthesiology.

Rod S. Kubley, M.D., Plymouth, family practice.

James B. Mammel, M.D., Indianapolis, obstetrics and gynecology.

C. S. Rakalla, M.D., Covington, general surgery.

Robert J. Rust, M.D., South Bend, diagnostic radiology.

Devdas N. Sheth, M.D., Jasper, therapeutic radiology.

John F. Williams Jr., M.D., Indianapolis, cardiovascular diseases.

Sedigheh Zolfaghari, M.D., Evansville, pediatrics.

Residents:

Karen L. Beard, M.D., Indianapolis, family practice.

Linda D. Blanchard, M.D., Plainfield, pediatrics.

Ronald J. Blevins, M.D., Indianapolis, otorhinolaryngology.

Scott D. Curry, M.D., Indianapolis, otorhinolaryngology.

Timothy M. Eisenhut, M.D., Indianapolis, pediatrics.

Linda S. Evans, M.D., Martinsville, pediatrics.

Nicholas E. Fohl, M.D., Indianapolis, family practice.

Deborah A. Franzek, M.D., Indianapolis, pediatrics.

Paula A. Hall, M.D., Indianapolis, family practice.

James S. Hoffman, M.D., Indianapolis, anesthesiology.

Nicholas F. Hrisomalos, M.D., Indianapolis, ophthalmology.

David R. Johnson, M.D., Indianapolis, family practice.

Michael A. Kuharik, M.D., Indianapolis, radiology.

Kimberly S. Lamberson, M.D., Indianapolis, rheumatology.

Neil K. Lesh, M.D., Indianapolis, anesthesiology.

Mary E. Rouse, M.D., Indianapolis, internal medicine.

Kayvon T. Safavi, M.D., Indianapolis, internal medicine.

Richard D. Schroeder, M.D., Baltimore, Md., orthopedic surgery.

J. Nathan Sherlock, M.D., Bloomington, family practice.

Kathleen N. Steiner, M.D., Muncie, family practice.

Samuel E. Toney, M.D., Marion, family practice.

Neil R. Wanee, M.D., Indianapolis, family practice.

Pharmacy Examiners Issue Warning on Levothyroxine

The Iowa Board of Pharmacy Examiners is advising pharmacists and physicians that levothyroxine products should not be interchanged.

The board office has received several calls inquiring about the bioequivalence of levothyroxine tablets, including Levothroid®, Synthroid® and generic brands.

After a review of the literature, the board found the FDA has not established equivalency of these products and that brand interchange is not recommended because of possible adverse effects.

Iowa pharmacists are being advised to dispense the brand prescribed even if the prescriber authorizes product selection. (*IMS Update*, May 1987)

COMPETITION

Commentary

One of the American ideals is free competition in the market-place of goods, services and ideas. Often though, the concept of competition is turned into a "dog eat dog" philosophy. The winner of the competition is often regarded as the man who can outflank his opponents with behind the scenes political chicanery. And sometimes the competition is simply erased or "rubbed out."

These warped ideas of "competition" are so prevalent that the original meaning of the word is often obscured.

"Com" mens "with" or "together." "Petere" means "to seek," just as we petition the Lord in our prayers. Or as a lawyer petitions a court.

So the real meaning of the word is "to seek together," with each person trying individually or with group action to achieve a common goal.—**Richard J. Noveroske, M.D., Newburgh**

CME QUIZ ...

CONTINUED FROM PAGE 695

8. The following statements relating to remarriage are correct except that
   a. Preadolescent and early adolescent girls frequently experience remarriage of the parents as upsetting.
   b. Remarriage of the mother may be constructive for boys.
   c. Older children and adolescents usually find it easy to call the new step-parent "mom" or "dad."
   d. The step-parent should try to establish a friendly relationship before becoming a disciplinarian.
9. The following statements about an infant born with a birth defect are true except
   a. A long-term handicap is never interpreted adequately in one visit.
   b. The mother and the father may not accept the reality of their baby's problem simultaneously.
   c. Few children with a handicap do well emotionally.
   d. Children with a long-term handicap or illness need careful preparation for changes.
10. The vulnerable child syndrome is characterized by the following except
    a. The mother's secret fear that her child is destined to die prematurely.
    b. Is difficult to treat.
    c. May follow a critical illness.
    d. May lead to excessive use of medical services.

Researchers Tackle Tropical Problem of River Blindness

The Upjohn Company is a member of a consortium with Michigan State University and the University of Georgia whose mission is to discover a chemotherapeutic substance that will effect a cure for the tropical disease commonly known as river blindness. Its scientific name is onchocerciasis. It is a filariasis.

A certain small filaria is carried by blackflies and, when transmitted to humans by fly bites, develops into a chronic filariasis that persists for many years, sometimes with few or no symptoms.

If the filaria gain entrance into the retina or the ophthalmic nerve, blindness results. Millions of natives in the tropics are affected.

There are two anti-filarial drugs known, but both are too toxic for use in the field. The present research project seeks less toxic formulations that will kill the filaria within the patient and prevent late complications such as blindness.

Searle Exploring Solutions to Medical Malpractice Crisis

G.D. Searle & Co. has announced it is establishing the Searle Alliance for Health Care, an organization chartered to explore and seek solutions to the national dilemma of the physicians' malpractice crisis.

Throughout the year, the Searle Alliance, working with physicians, policymakers and other experts in health care, will examine the entire issue of professional liability as it pertains to law, insurance, government, public policy and medicine. The Alliance will also sponsor programs in medical and consumer education, and encourage a public discussion of the problem.

More Women Getting AIDS From Heterosexual Contact

A recent article in *JAMA* reports that the proportion of women in the U.S. who have acquired AIDS through heterosexual contact with an infected partner has more than doubled since 1982. The proportion of women in the IV drug use category decreased between 1983 and 1986.

The study says: "Heterosexual contact is the only transmission category where women with AIDS outnumber men with AIDS. In the United States, at the present time, a heterosexual woman is at greater risk for acquiring AIDS through sexual intercourse than is a heterosexual man."

NIH Announces Plans for Three Consensus Conferences

The National Institutes of Health have announced plans for three Health Consensus Development Conferences, all of which will be conducted in the Masur Auditorium, Bethesda, Md. They are:

Health Benefits of Pets, Sept. 10-11; Geriatric Assessment Methods for Clinical Decision-making, Oct. 19-21; and Magnetic Resonance Imaging, Oct. 26-28.

Physician Recognition Awards

The following ISMA physicians are recent recipients of the AMA's Physician Recognition Award. This award is official documentation of Continuing Medical Education hours earned, and is acceptable proof in most states requiring CME in re-registration that the mandatory hours of CME have been accomplished.

Ahler, Kenneth J., Rensselaer
Baker, Glenn W., Brownsburg
Bills, Robert J., Merrillville
Bisson, Kenneth A., Angola
Blaisdell, William E., Seymour
Bleza, Maximo T., Munster
Boha, Rudolf L., Floyds Knobs
Cooperman, Alan S., Fort Wayne
Crabb, Daniel G., Carmel
Daftary, Mostafa, Greensburg
Donesa, Antonio B., Fort Wayne
Felker, Dean R., Greenfield
Flint, Douglas R., Indianapolis
Gabrys, G.T., Fort Wayne
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Greene, Morgan E., Indianapolis
Hardin, Stephen L., Martinsville
Harvey, William D., Logansport
Hathaway, William H., Auburn
Hegeman, Theodore F., Indianapolis
Hickman, Donald M., Fort Wayne
Hollenberg, Edward L., Winamac
Houck, Verlin T., Nappanee
Howard, Michael D., LaPorte
Howell, Ray D., Roachdale
Jones, Francis P., Indianapolis
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Kriel, William B., Crane
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Stephens, Susan A., Carmel
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Taube, Robert R., Terre Haute
Tirman, Wallace S., Plymouth
Torrella, Roxann M., Indianapolis
Trier, Herbert P., Fort Wayne
Wunder, William E., Noblesville

NEWS NOTES

Here and There ...

Dr. John A. Knote of Lafayette has been appointed Indiana's Health Policy Agenda spokesman and coordinator of local HPA initiatives.

Dr. Earle U. Robinson Jr. of Indianapolis will present a paper on pelviscopy surgery, which employs innovative techniques in laparoscopic surgery, in November at the American Association of Gynecologic Laparoscopists' annual meeting in San Francisco.

Dr. Lawrence E. Benham, a staff member of Dunn Memorial Hospital, Bedford, more than 35 years, has had a patient room in the hospital named in his honor; a dedication ceremony was conducted in May.

Dr. Cloyd L. Dye of New Castle has been named medical director of the Oakwood Health Care Center, a 36-bed skilled long-term care facility at Henry County Memorial Hospital.

Dr. Henry C. Bock of Indianapolis has been named to the Indiana Emergency Medical Services Commission's Air Medevac Task Force, which will develop new rules governing emergency medical air transportation.

Dr. Kenneth E. Bobb of Seymour has been appointed chairman of the Committee on Mental Health, American Academy of Family Physicians.

Dr. David Kuhaneck of Lawrenceburg has been named a diplomate of the American Board of Psychiatry.



"I received your final notice last month on the bill I owe you—Thanks, and I'll forever be in your debt."

Dr. Florencio C. Villa, a Union City general surgeon 15 years, has retired from practice.

Dr. John Ayres and Dr. Michael T. Johnson of Batesville have been certified as diplomates of the American Board of Internal Medicine.

Dr. Edward L. Hollenberg of Winamac has accepted an appointment to the faculty of the University of Illinois College of Medicine, Peoria; he had practiced in Winamac since 1955.

Dr. James M. Fink, medical director of cardiac rehabilitation at St. Joseph's Medical Center, South Bend, discussed exercise at a local public meeting in May.

Dr. Tae G. Kiehm and Dr. Etta K. Nevel discussed diabetes and pregnancy during an April meeting at St. Joseph Hospital, Mishawaka.

Dr. John A. Forchetti, a Valparaiso cardiologist, discussed the myths and misconceptions about heart remedies at a recent meeting in Valparaiso.

Dr. Richard W. Cross of Warsaw discussed pre-menstrual syndrome at an April public meeting in Plymouth.

Dr. Richard W. Newcomb of Merrillville discussed summer allergies at an April meeting in Dyer sponsored by the Northwest Indiana Division, Asthma and Allergy Foundation of America.

Dr. Ara V. Dumanian of Hammond discussed "Advances in Heart Surgery" at a recent meeting of the Michigan City Community Mended Hearts Club.

Dr. S.K. Joishy, a Bloomington oncologist, discussed "The Pathology of the Cancer Cell" at a recent "I Can Cope" session at Greene County General Hospital; as part of the same series, Dr. Thomas E. Bailey of Linton discussed the diagnosis and treatment of cancer.

Dr. Andrew F. Marciniak, an Anderson pathologist, discussed AIDS at the April Women and Health program presented by Community Hospital, Anderson.

Dr. Borys Surawicz of the Krannert Institute of Cardiology, Indianapolis, has been invited to join the Editorial Board of the new journal, *Geriatric Cardiovascular Medicine*, to be published by Gower Academic Journals.

Dr. Daniel P. Akin, director of the Akin Medical Center of New Albany, was a featured speaker at the annual meeting in May of the Kentucky Ear, Nose and Throat Society.

Dr. David L. Buckles of Anderson has been elected president of the Central Indiana Regional Blood Center and Blood Research and Education Foundation.

Dairy Products Said to be Best Source of Calcium for Teens

Recent research reported from the I.U. School of Medicine indicates that the levels of absorption of calcium by teenagers varies considerably. Two principal sources, calcium carbonate and calcium citrate-malate, were detailed.

Carbonate absorption averaged 20% in a range from 13% to 40%. The citrate-malate salt scored 36% with a range between 27% and 53%.

Discussants agreed that the best source of calcium is dairy products, in which the bioavailability is certain. The bioavailability of calcium in fortified foods is not clear.

Medical History Museum Honors Five Board Members

The Indiana Medical History Museum recently recognized five of the Indianapolis organization's board members for their continued service and dedication to the museum. They are Doctors John U. Keating, Bernard D. Rosenak, Dwight W. Schuster, William M. Sholty and Dorothy White (the wife of the late Dr. Donald J. White).

All of the honored board members have served the museum since its founding in 1969. They were given special awards at the Indiana University School of Medicine Alumni Day luncheon May 20.

24 Hospitals Sign up for Annson Systems' New Software Package

Annson Systems, a division of Travenol Laboratories and the leading provider of hospital-physician network software, has recently signed contracts with 24 hospitals for its AnnsonLink™ technology. In addition, Annson has been named the vendor of choice by three leading hospital associations, representing 700 hospitals.

AnnsonLink allows physicians to access patient data from the hospital's information system and automatically integrate or download that information into the patient management systems in their offices.

In addition, AnnsonLink allows the physician to pre-admit patients into the hospital, supplying demographic and payer information and pre-admission orders; and to obtain lab and radiology reports and medical transcription and other hospital system applications, which can be printed out and integrated into the patient's automated medical records or the doctor's word processing system without having to rekey information.

Researchers Urge Diabetics to Wear Running Shoes

Wearing running shoes may help prevent foot amputations for persons with diabetes. An 18-month study shows evidence that the running shoes could lead to reduction of foot problems of diabetics.

The Diabetes Educator, which announced the finding, is published quarterly by the American Association of Diabetes Educators.

Send your news items and comments to the Editor, INDIANA MEDICINE, 3935 N. Meridian St., Indianapolis 46208.

Food Preservatives Are OK, But More Research Is Needed

"Are Preservatives Good for You?" is a question addressed by author Kathleen A. Meister in the March/April issue of "ACSH News and Views."

"Would you buy a food product with a label that announced it spoils faster than competing brands do?" she asks. "That's what you're really doing when you select a loaf of bread that contains no preservatives."

The article stresses that what is needed is not an abolition of preservatives, but new and safer methods of food preservation.

It is pointed out that carcinoma of the stomach is still prevalent in societies that rely on traditional methods such as smoking, salting and pickling to preserve meat products. "But in societies that have switched to refrigeration, freezing and the use of modern chemical preservatives, stomach cancer rates have declined."

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A foundation for charitable, educational, and scientific purposes, organized by the ISMA as an endowment fund to support the educational mission of the Association and INDIANA MEDICINE.

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The Foundation is managed by a board of directors that comprises the members of the ISMA Executive Committee. At present, proceeds from the Foundation investments are awarded to INDIANA MEDICINE to further the continuing medical education program.

Memorial contributions made to the Foundation in lieu of flowers will be acknowledged by the secretary in a letter to the family of the deceased.

"for religious, charitable, scientific, literary or educational purposes"

OBITUARIES

Hans Sahlmann, M.D.

Dr. Sahlmann, 92, a retired Fort Wayne general practitioner, died May 1.

He received the M.D. degree in 1921 from the University of Heidelberg in West Germany. He began practicing in Fort Wayne in 1939.

Dr. Sahlmann was a member of the ISMA Fifty Year Club.

William A. Shuck, M.D.

Dr. Shuck, 77, a former Madison surgeon, died at his home in Lake Placid, Fla., May 9.

He was a 1932 graduate of Indiana University School of Medicine and was an Army veteran of World War II.

Dr. Shuck was a member of the ISMA Fifty Year Club and was a fellow of the American College of Surgeons.

Harold R. Onyett, M.D.

Dr. Onyett, 68, a retired Greenwood general practitioner, died May 14 at Terre Haute Regional Hospital.

He was a 1953 graduate of Indiana University School of Medicine and was an Army veteran of World War II.

Dr. Onyett retired from practice in 1984.

James H. Crowder, M.D.

Dr. Crowder, 84, a retired Sullivan surgeon, died May 18 at the Sullivan Convalescent Center.

He was a 1929 graduate of Rush Medical College.

Dr. Crowder, a member of the ISMA Fifty Year Club, served as an ISMA trustee during the 1940s and 1950s. He was a former president of the Sullivan County Medical Society and was a founder of Blue Cross and Blue Shield of Indiana. He was a fellow of the American College of Surgeons.

William R. Shaffer, M.D.

Dr. Shaffer, 64, a retired Greensburg anesthesiologist, died May 17 at Ball Memorial Hospital, Muncie.

He was a 1951 graduate of the University of Louisville School of Medicine and was a World War II veteran.

Dr. Shaffer retired two years ago. He had served as an ISMA delegate representing Decatur County during the 1960s. He was a member of the American Academy of Family Physicians and the American Society of Anesthesiologists. He had been associated with Decatur County Memorial Hospital.

Jaime G. Ramos, M.D.

Dr. Ramos, 54, a Rochester physician, died at his home May 4.

He was a 1958 graduate of the College of Medicine, Manila Central University, the Philippines.

Dr. Ramos had practiced in Rochester since 1976. He was a former president of the Fulton County Medical Society and a member of the American Academy of Family Physicians.

George O. Avery, M.D.

Dr. Avery, 60, a retired Indianapolis physician who received a heart transplant last year, died May 20 at Methodist Hospital, Indianapolis.

He was a 1952 graduate of Indiana University School of Medicine and an Army veteran of World War II.

Dr. Avery, who retired last year, had been a staff member of Methodist Hospital. He was a member of the American Academy of Family Physicians.

Walter M. Mikulaschek, M.D.

Dr. Mikulaschek, 65, a retired Indianapolis physician, died June 1 at Methodist Hospital of Indiana.

He received the M.D. degree in 1948 from the University of Heidelberg, West Germany.

Dr. Mikulaschek had been employed by Eli Lilly and Company for 27 years as a clinical investigator of therapeutic and anti-inflammatory agents. He retired last year. His professional affiliations included the American College of Physicians and the American Society for Clinical Pharmacology and Therapeutics.

Memorials: Indiana Medical Foundation

The Indiana Medical Foundation, Inc. was formed by the Indiana State Medical Association "for religious, charitable, scientific, literary or educational purposes." It provides financial assistance to support the educational mission of INDIANA MEDICINE.

Contributions made to the Foundation are deductible by donors in accordance with the Internal Revenue Code. Gifts are deductible for Federal estate and gift tax purposes.

The Foundation is pleased to acknowledge the receipt of gifts in remembrance of the following individuals:

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The Indiana State Medical Association operates a Physician Placement Service to help physicians and residents locate practice opportunities. For details, write: Physician Placement Coordinator, Indiana State Medical Association, 3935 N. Meridian St., Indianapolis, Indiana. 46208, or call (800) 382-1721 / (317) 925-7545.

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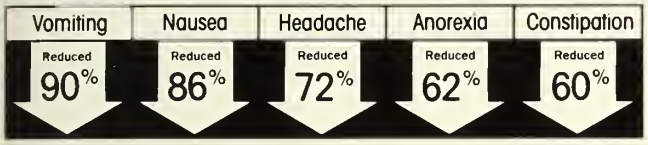
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Anticholinergic: Disturbance of accommodation, paralytic ileus, urinary retention, dilatation of urinary tract.
Allergic: Skin rash, urticaria, photosensitization, edema of face and tongue, pruritus.
Hematologic: Bone marrow depression including agranulocytosis, eosinophilia, purpura, thrombocytopenia.
Gastrointestinal: Nausea, epigastric distress, vomiting, anorexia, stomatitis, peculiar taste, diarrhea, black tongue.
Endocrine: Testicular swelling and gynecomastia in the male, breast enlargement, galactorrhea and minor menstrual irregularities in the female, elevation and lowering of blood sugar levels, and syndrome of inappropriate ADH (antidiuretic hormone) secretion.
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INDIANA MEDICINE

Vol. 80, No. 8
AUGUST 1987

Devoted to the interests of the medical profession and public health in Indiana since 1908.

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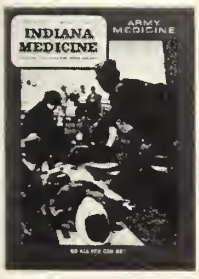
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ABOUT THE COVER

Medics participate in a mock disaster exercise at Hawley Army Hospital, Ft. Benjamin Harrison, one of the state's smallest accredited hospitals. In this issue, "Be All You Can Be!" examines the intriguing questions of why some physicians choose Army life over civilian practice. Is it money, education, professional development or patriotism?—PHOTO BY BOB LONSBERRY

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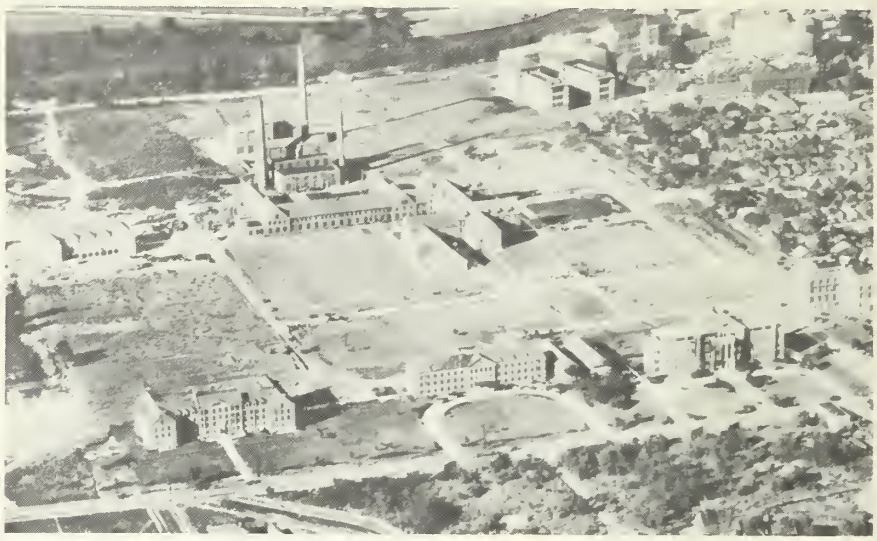
MEDICAL MUSEUM NOTES

CHARLES A. BONSETT, M.D., Indianapolis

The Early Years: Indiana University School of Medicine



Dr. Frank B. Wynn and his son James. James, a 1918 IUSM graduate, received the Ravdin Medal that year. Dr. Frank Wynn was a principal organizer of the I.U. School of Medicine and served on its Educational Committee continuously until his death in 1922.



The I.U. Medical Center, circa 1931.



Dr. Frank Forry, Professor of Pathology at IUSM, was first listed in the School of Medicine's catalog in 1925. This photo was probably taken in the 1930s.



Dr. Virgil Homer Moon was the I.U. School of Medicine's first pathologist. His name first appeared in IUSM's catalog for 1915.



Dr. Willis Gatch, dean of the I.U. School of Medicine, 1931-1946.



Dr. Charles Emerson (third from left) makes his rounds on the Children's Ward at Long Hospital on the Medical Center campus. Riley Hospital was not yet in existence. Others in the photo have not been identified.



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WHAT'S NEW?

News of what is new in the medical supply industry is composed of abstracts from news releases by book publishers and manufacturers of pharmaceuticals, clinical laboratory supplies, instruments and surgical appliances. Each item is published as news and does not necessarily constitute an endorsement of a product or recommendation for its use by INDIANA MEDICINE or by the Indiana State Medical Association.

Candela Laser Corporation announces the Candela Laser Lithotripter, Model MDL-1. This powerful laser offers a safe and powerful method for fragmenting ureteral calculi without trauma to soft tissues. The Candela laser lithotripter is a flashlamp-excited pulsed dye laser that is tuned precisely to the wavelength that is absorbed most efficiently by calculus material and not by soft tissue. The beam is transmitted through a 250 micron quartz laser fiber. A miniaturized semirigid 6.3 French ureteroscope permits direct access to most ureteral stones without the need for dilation or basket entrapment.



Walter H. Ryff's ANATOMICA (1545)



MICROGRAPHIA NOVA (1687)

Ryff's Anatomica, published originally in 1545, and Micrographia Nova (1687) have been reproduced by the Atlas Library. One thousand limited copies were reproduced in as close as possible to the original rag paper, which has been antiqued and imprinted with the original text and illustrations. Anatomica is for sale at $150, Micrographia at $250. Both may be had for $350.

Hewlett-Packard has a new ECG monitor (HP 78351T) that provides high-quality patient-monitoring capabilities for emergency room, intensive care, operating room, specialty clinic and other areas where reliable ECG monitoring is important. New efficiencies have enabled HP to provide these capabilities and reliability at a low price.

Norwich Eaton Pharmaceuticals announces the plentiful availability of Dantrium® (dantrolene sodium) IV. The drug is indicated in the emergency treatment of malignant hyperthermia occurring during anesthesia. The drug must be at hand in each operating room because of the need for prompt intravenous administration when the hyperthermia develops. The use of Dantrium has reduced the mortality of malignant hyperthermia from 70% to less than 10%.

Lippincott offers the 31st edition of *American Drug Index—1987*, as well as *Logan's Medical and Scientific Abbreviations*; the latter features more than 20,000 entries. The Index is $25.50, Abbreviations $22.50.

Hewlett-Packard has introduced two new cardiographs that offer improved reliability as well as faster and more accurate interpretation. The HP PageWriter II cardiographs (Models 4765A and 4745A) feature a new, streamlined design with 30% fewer parts than previous models. The simplified design makes operation easier, reduces the number of mechanical problems, and makes repair fast and easy.

International Component Manufacturing of Fort Worth, Texas, has developed Exer-flex, a silicone exercise putty that comes in soft, medium and firm strengths. It is useful for patients recovering from surgical procedures on the hand, and is more adaptable than the "squeeze-the-ball" technique. It also is ideal for athletes, sportsmen or patients in general who wish to increase manual dexterity and overall muscle strength. It may be useful for relieving stress. Recommended for busy doctors, therapists and business executives.

Colwell Systems has a new recall kit, designed to help physicians build and maintain a sound patient base. The kit contains a collection of several different types of patient reminder vehicles that can be personalized for the individual practice. Included are pre-printed birthday cards and appointment reminders, as well as postcards that may be used to help patients remember periodic examinations or routine checkups. Custom recall cards can be imprinted with a personal message of up to 50 words.

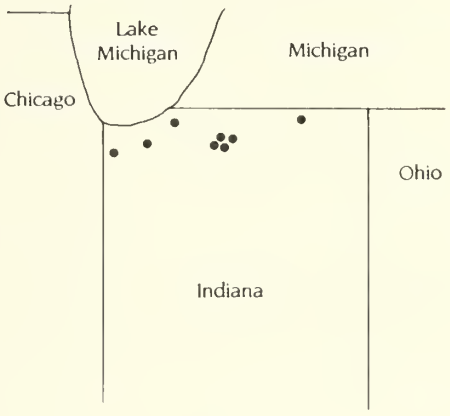
Hewlett-Packard has new monitoring capabilities to provide a flexible approach to CO2/02 assessment. Three new alternatives for monitoring ETC02 (end-tidal CO2) and FIO2 (fractional-inspired 02) with on-airway sensors to help assess oxygenation and ventilation in patient monitoring are now available: 1) A CO2/FIO2 stand-alone patient monitor to supplement existing monitoring. 2) A configured patient monitor with a choice of up to eight integrated measurements including CO2/FIO2 or CO2/NIBP. 3) A CO2/FIO2 module that joins HP's family of plug-ins for its HP 78534 series of monitor/terminals.

Brentwood Instruments has introduced the FCP-211 multi-channel, computer-aided electrocardiograph with a full analysis program. It features three sensitivity settings, on-demand digital filters to eliminate artifact and drift, and a thermal print head. It is described as sophisticated and easy to use.

Meridian wants you to know

What you should know about Meridian Healthcare services and facilities.

Meridian Healthcare operates eight major facilities in northern Indiana — in Elkhart, Michigan City, Dyer, Gary and South Bend.



Meridian provides a full range of residence and care options, including The Milton Home — a luxurious lifestyle for fully independent seniors — and The Manor, which offers home-like surroundings for those needing minimal assistance. Meridian Nursing Centers offer both long-term and short-term, or "respite," care. Rehabilitative services, such as physical, speech and occupational therapies are also available. Meridian Nursing Center — Dyer operates a Special Care Unit for the needs of the critically ill patient.

Meridian has prepared a referral information kit detailing our facilities and services. In it you will find information on how you and your patients' families in the northern Indiana areas served by our eight facilities can take advantage of the many nursing care programs that we offer. This kit is available, without charge, to physicians and hospital administrations. To obtain a copy for your office, please clip and send the coupon below.

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Name _____

Address _____

Telephone _____

Organization _____

For hospitals and PA's with need for more than one information kit, please indicate the number of additional kits needed _____.

FUTURE FILE

Structural Family Therapy

An International Structural Family Therapy Conference on "State of the Art and New Directions" will be conducted Sept. 18-19 in Philadelphia.

To register, write Conference Coordinator, The Family Therapy Training Center, Philadelphia Child Guidance Clinic, 34th St. and Civic Center Blvd., Philadelphia, Pa. 19104.

Community Hospitals CME

Oct. 9: Second Annual Sleep/Wake Disorders Seminar, Holiday Inn North, Indianapolis.

Nov. 13: First Annual Pain Seminar, Radisson Plaza Hotel, Indianapolis.

For more information, contact Carolyn Roeder, Medical Education, Community Hospitals Indianapolis—(317) 353-4269.

Eating Disorders

"Eating Disorders" is the topic of a CME meeting at the Holiday Inn, S.E., Madison, Wisc., Sept. 22-23.

The program, accredited for 10 AMA Category 1 hours, is oriented to physicians and allied health professionals.

The correspondent is Cathy Means, 465A WARF Bldg., 610 Walnut St., Madison, Wisc. 53705—(608) 263-6637.



"Yes, your stock portfolio is in terrible shape. No, it won't do you any good to get a second opinion."

The *Journal of the American Medical Association* publishes a list of CME courses for the United States twice yearly. The January listing features courses offered from March through August; the July listing features courses offered from September through February.

Indiana University CME

Aug. 28-29: Thyroid and Parathyroid Disease: The Surgeon's Role, Lincoln Hotel and University Convention Center, Indianapolis.

Sept. 9-12: Update in Cardiology: Cardiovascular Review, Indiana Convention Center, Indianapolis.

Sept. 11: Methods of Skeletal Fixation, Lincoln Hotel, Indianapolis.

Sept. 11: Office Orthopedics, Fourwinds Resort, Lake Monroe, Bloomington.

Sept. 18: Indiana Neonatal Society meeting, Lincoln Hotel, Indianapolis.

Sept. 30: Diabetic Foot Infections, Lincoln Hotel, Indianapolis.

Oct. 2-3: Advanced Trauma Life Support, Reid Memorial Hospital, Richmond.

Oct. 7-8: 15th Annual Fall Symposium on Pediatric Trauma and Critical Care, Lincoln Hotel, Indianapolis.

Oct. 21: AIDS Symposium, Lincoln Hotel, Indianapolis.

Oct. 24-25: Advanced Trauma Life Support, Wishard Memorial Hospital, Indianapolis.

For more information, contact Melody Dian, CME, I.U. School of Medicine—(317) 274-8353.

Diabetes Educators

The American Association of Diabetes Educators will conduct its 14th annual meeting and educational program, "The Change Masters: Focus on Excellence," at Marriott's Orlando World Center, Orlando, Fla., Sept. 9-13.

Registration fee is $205 for members, $240 for non-members. Contact Betty Lou Mobeck, 500 N. Michigan Ave., Suite 1400, Chicago 60611—(312) 661-1700.

Practice Management

Two AMA practice management workshops for physicians and office staff will be conducted Friday, Sept. 11, at St. Vincent Hospital, Indianapolis.

The four-hour morning workshop, "Medical Collections Management," will cover the practical aspects of collection as well as legal and ethical considerations.

The three-hour afternoon workshop, "The Competitive Edge: Practice Building Techniques for Today's Health Care Market," will deal with reaching new patients, maintaining patient loyalty and building a referral network.

Discounted registration fees will be given to members of the Indiana Society of Internal Medicine and their office staff members. Contact Carolyn Downing at ISMA headquarters for details.

Impairment

The AMA National Conference on the Impaired Health Professional will be held October 8 to 11 at the Drake Hotel, Chicago. The major theme will be: "Impaired Health Professionals: Educating Ourselves, Educating Others."

For further information contact Janice J. Robertson, AMA Department of Substance Abuse, 535 N. Dearborn St., Chicago 60610—(312) 645-5083.

St. Vincent Hospital CME

St. Vincent Hospital and Health Care Center, Indianapolis, announces the following CME programs.

Oct. 7: 12th Annual Arthur B. Richter Lectureship in Clinical Cardiology; Thomas N. James, M.D., guest lecturer; Sheraton Marten House.

Oct. 21-23: Intervention in Cardiovascular Disease; David Cumberland, M.D. and Eric Topol, M.D., guest lecturers; Cooling Auditorium, St. Vincent Hospital.

For more information, call Marilyn Soltermann, CME coordinator—(317) 871-3460.

Cancer Research

"Genetic Mechanisms and Cancer" is the topic of the 40th Annual Symposium on Fundamental Cancer Research to be held at the Westin Galleria Hotel, Houston, Nov. 8-11.

For more information, contact the Office of Conference Services, UT M.D. Anderson Hospital and Tumor Institute, 1515 Holcombe Blvd., Houston, Tex. 77030—(713) 792-2222.

Methodist Hospital CME

Aug. 24-28 and Dec. 14-18: Overview of Diagnostic Ultrasound (Mini-Fellowship), Methodist Hospital, Indianapolis.

Sept. 11: Frontiers in Treatment of the Failing Heart, Methodist Hospital.

Sept. 16-18: Research Design and Medical Biostatistics for the Clinician (co-sponsor: American College of Physicians), Hilton-on-the-Circle, Indianapolis.

Sept. 18-19 and Nov. 13-14: Advanced Trauma Life Support, Methodist Hospital.

Oct. 9-10: Advanced Cardiac Life Support, Methodist Hospital.

Oct. 9-10: Central Neuropsychiatric Association meeting, Holiday Inn, Union Station, Indianapolis.

Oct. 15-16: 8th Annual Harold C. Oschner, M.D., Radiology Lectureship ("Thoracic Imaging"), Lawrence Good, M.D., at Methodist Hospital.

Oct. 23-24: Emergency Medicine Update 1987, Methodist Hospital.

Oct. 28: 6th Annual Pediatric Critical Care Symposium, Methodist Hospital.

Nov. 4: Lester Bibler, M.D., Annual Family Practice Lectureship ("Practical Topics on Care of the Elderly"), Methodist Hospital.

Nov. 18-19: 5th Seminar on Community Cancer Care, Hilton-on-the-Circle, Indianapolis.

Dec. 2: 6th Annual Symposium on Ethical and Moral Issues in Medicine (co-sponsor: St. Vincent Hospital), Ritz Charles, Carmel.

For more information, contact Dixie Estridge, CME coordinator, Graduate Medical Center, Methodist Hospital of Indiana—(317) 929-3733.

AMA Communications

The AMA National Communications Conference meets at the Drake Hotel, Chicago, Oct. 29-31.

Session topics include: Spokesperson Training, Basic Public Relations, Streamlining the Management of Your Communications, Public Relations Program Measurement and Evaluation, Desktop Publishing, Helping Your Members Market Their Practices, and Your Communications in a Crisis.

Write AMA Division of Communications, 535 N. Dearborn, Chicago 60610.

ISMA-HMSS Annual Meeting

The annual meeting of the Indiana State Medical Association-Hospital Medical Staff Section will be held Sunday, Sept. 13, at the Radisson Plaza Hotel, Indianapolis. The meeting is scheduled for 9 a.m. to 4 p.m., with a luncheon at noon.

The meeting will feature an election of officers, discussion of proposed resolutions to the ISMA House of Delegates, a review of AMA-HMSS resolutions to the AMA House of Delegates, and a program on AIDS and PRO sanctions.

For more information, contact Ron Dyer at ISMA headquarters.

Evansville Seminars

St. Mary's Medical Center, Evansville, announces the following fall seminar series:

Sept. 17: Joseph E. Coleman Pediatric Seminar on Advances in Pediatric Otolaryngology and Pulmonary Disease;

Oct. 15: The Endocrine Seminar on Pathophysiology of Diabetes Mellitus;

Nov. 5: Family Practice Seminar on the Treatment of Male and Female Psychosexual Dysfunction.

For more information contact CME, St. Mary's Medical Center, 3700 Washington Ave., Evansville, Ind. 47750—(812) 479-4468.

MARK YOUR CALENDAR

WHAT: The annual Indiana State Medical Association convention

WHEN: Thursday through Sunday, November 5-8, 1987

WHERE: The Radisson Plaza Hotel, Indianapolis

THEME: The Changing Face of Medicine

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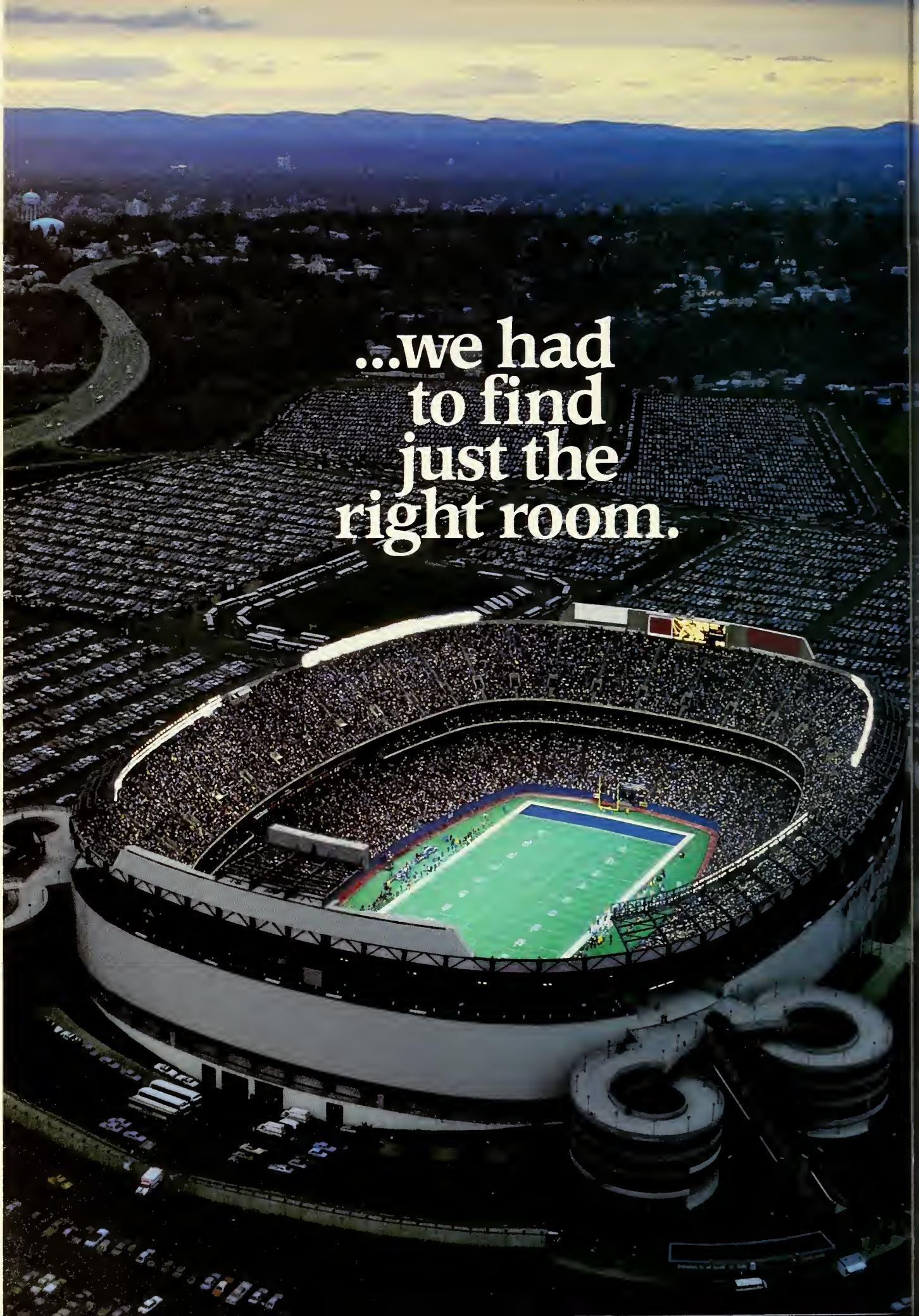
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The patients in the nationwide compliance trial were no different from yours. Generally when the antihypertensive regimen is complicated, compliance may become a problem. So, the effectiveness of INDERAL LA as once-daily monotherapy is a big plus. Of the remaining hypertensives in the program, 36% were treated merely with the addition of a diuretic to INDERAL LA.

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*After a 30-day trial with INDERAL LA, physicians reported that 90% of the patients would remain on INDERAL LA.

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BRIEF SUMMARY *(FOR FULL PRESCRIBING INFORMATION, SEE PACKAGE CIRCULAR.)*

INDERAL® LA brand of propranolol hydrochloride **(Long Acting Capsules)**

DESCRIPTION. INDERAL LA is formulated to provide a sustained release of propranolol hydrochloride. INDERAL LA is available as 60 mg, 80 mg, 120 mg, and 160 mg capsules.

CLINICAL PHARMACOLOGY. INDERAL is a nonselective, beta-adrenergic receptor-blocking agent possessing no other autonomic nervous system activity. It specifically competes with beta-adrenergic receptor-stimulating agents for available receptor sites. When access to beta-receptor sites is blocked by INDERAL, the chronotropic, inotropic, and vasodilator responses to beta-adrenergic stimulation are decreased proportionately.

INDERAL LA Capsules (60, 80, 120, and 160 mg) release propranolol HCl at a controlled and predictable rate. Peak blood levels following dosing with INDERAL LA occur at about 6 hours and the apparent plasma half-life is about 10 hours. When measured at steady state over a 24-hour period the areas under the propranolol plasma concentration-time curve (AUCs) for the capsules are approximately 60% to 65% of the AUCs for a comparable divided daily dose of INDERAL Tablets. The lower AUCs for the capsules are due to greater hepatic metabolism of propranolol, resulting from the slower rate of absorption of propranolol. Over a twenty-four (24) hour period, blood levels are fairly constant for about twelve (12) hours then decline exponentially.

INDERAL LA should not be considered a simple mg-for-mg substitute for conventional propranolol and the blood levels achieved do not match (are lower than) those of two to four times daily dosing with the same dose. When changing to INDERAL LA from conventional propranolol, a possible need for retitration upwards should be considered especially to maintain effectiveness at the end of the dosing interval. In most clinical settings, however, such as hypertension or angina where there is little correlation between plasma levels and clinical effect, INDERAL LA has been therapeutically equivalent to the same mg dose of conventional INDERAL as assessed by 24-hour effects on blood pressure and on 24-hour exercise responses of heart rate, systolic pressure and rate pressure product. INDERAL LA can provide effective beta blockade for a 24-hour period.

INDICATIONS AND USAGE. Hypertension: INDERAL LA is indicated in the management of hypertension. It may be used alone or used in combination with other antihypertensive agents, particularly a thiazide diuretic. INDERAL LA is not indicated in the management of hypertensive emergencies.

Angina Pectoris Due to Coronary Atherosclerosis: INDERAL LA is indicated for the long-term management of patients with angina pectoris.

Migraine: INDERAL LA is indicated for the prophylaxis of common migraine headache. The efficacy of propranolol in the treatment of a migraine attack that has started has not been established and propranolol is not indicated for such use.

Hypertrophic Subaortic Stenosis: INDERAL LA is useful in the management of hypertrophic subaortic stenosis, especially for treatment of exertional or other stress-induced angina, palpitations, and syncope. INDERAL LA also improves exercise performance. The effectiveness of propranolol hydrochloride in this disease appears to be due to a reduction of the elevated outflow pressure gradient which is exacerbated by beta-receptor stimulation. Clinical improvement may be temporary.

CONTRAINDICATIONS. INDERAL is contraindicated in 1) cardiogenic shock, 2) sinus bradycardia and greater than first-degree block, 3) bronchial asthma; 4) congestive heart failure (see WARNINGS) unless the failure is secondary to a tachyarrhythmia treatable with INDERAL.

ONCE-DAILY

INDERAL® LA

(PROPRANOLOL HCl)

LONG ACTING CAPSULES

60 mg 80 mg 120 mg 160 mg *



WARNINGS. CARDIAC FAILURE. Sympathetic stimulation may be a vital component supporting circulatory function in patients with congestive heart failure, and its inhibition by beta blockade may precipitate more severe failure. Although beta blockers should be avoided in overt congestive heart failure, if necessary, they can be used with close follow-up in patients with a history of failure who are well compensated and are receiving digitalis and diuretics. Beta-adrenergic blocking agents do not abolish the inotropic action of digitalis on heart muscle.

IN PATIENTS WITHOUT A HISTORY OF HEART FAILURE, continued use of beta blockers can, in some cases, lead to cardiac failure. Therefore, at the first sign or symptom of heart failure, the patient should be digitalized and/or treated with diuretics, and the response observed closely, or INDERAL should be discontinued (gradually, if possible).

IN PATIENTS WITH ANGINA PECTORIS, there have been reports of exacerbation of angina and, in some cases, myocardial infarction, following *abrupt* discontinuance of INDERAL therapy. Therefore, when discontinuance of INDERAL is planned, the dosage should be gradually reduced over at least a few weeks, and the patient should be cautioned against interruption or cessation of therapy without the physician's advice. If INDERAL therapy is interrupted and exacerbation of angina occurs, it usually is advisable to reinstitute INDERAL therapy and take other measures appropriate for the management of unstable angina pectoris. Since coronary artery disease may be unrecognized, it may be prudent to follow the above advice in patients considered at risk of having occult atherosclerotic heart disease who are given propranolol for other indications.

Nonallergic Bronchospasm (eg, chronic bronchitis, emphysema) — PATIENTS WITH BRONCHOSPASTIC DISEASES SHOULD IN GENERAL NOT RECEIVE BETA BLOCKERS. INDERAL should be administered with caution since it may block bronchodilation produced by endogenous and exogenous catecholamine stimulation of beta receptors.

MAJOR SURGERY. The necessity or desirability of withdrawal of beta-blocking therapy prior to major surgery is controversial. It should be noted, however, that the impaired ability of the heart to respond to reflex adrenergic stimuli may augment the risks of general anesthesia and surgical procedures.

INDERAL (propranolol HCl), like other beta blockers, is a competitive inhibitor of beta-receptor agonists and its effects can be reversed by administration of such agents, eg, dobutamine or isoproterenol. However, such patients may be subject to protracted severe hypotension. Difficulty in starting and maintaining the heartbeat has also been reported with beta blockers.

DIABETES AND HYPOGLYCEMIA. Beta blockers should be used with caution in diabetic patients if a beta-blocking agent is required. Beta blockers may mask tachycardia occurring with hypoglycemia, but other manifestations such as dizziness and sweating may not be significantly affected. Following insulin-induced hypoglycemia, propranolol may cause a delay in the recovery of blood glucose to normal levels.

THYROTOXICOSIS. Beta blockade may mask certain clinical signs of hyperthyroidism. Therefore, abrupt withdrawal of propranolol may be followed by an exacerbation of symptoms of hyperthyroidism, including thyroid storm. Propranolol may change thyroid function tests, increasing T_4 and reverse T_3, and decreasing T_3.

IN PATIENTS WITH WOLFF-PARKINSON-WHITE SYNDROME, several cases have been reported in which, after propranolol, the tachycardia was replaced by a severe bradycardia requiring a demand pacemaker. In one case, this resulted after an initial dose of 5 mg propranolol.

PRECAUTIONS. GENERAL. Propranolol should be used with caution in patients with impaired hepatic or renal function. INDERAL (propranolol HCl) is not indicated for the treatment of hypertensive emergencies.

Beta-adrenoreceptor blockade can cause reduction of intraocular pressure. Patients should be told that INDERAL may interfere with the glaucoma screening test. Withdrawal may lead to return of increased intraocular pressure.

CLINICAL LABORATORY TESTS. Elevated blood urea levels in patients with severe h disease; elevated serum transaminase, alkaline phosphatase, lactate dehydrogenase.

DRUG INTERACTIONS. Patients receiving catecholamine-depleting drugs such as re pine should be closely observed if INDERAL is administered. The added catecholam blocking action may produce an excessive reduction of resting sympathetic nervous act which may result in hypotension, marked bradycardia, vertigo, syncopal attacks, or orthost hypotension.

Caution should be exercised when patients receiving a beta blocker are administer calcium-channel-blocking drug, especially intravenous verapamil, for both agents may press myocardial contractility or atrioventricular conduction. On rare occasions, the conc tant intravenous use of a beta blocker and verapamil has resulted in serious adverse reacti especially in patients with severe cardiomyopathy, congestive heart failure or recent myo dial infarction.

Aluminum hydroxide gel greatly reduces intestinal absorption of propranolol.

Ethanol slows the rate of absorption of propranolol.

Phenytoin, phenobarbitone, and *rifampin* accelerate propranolol clearance.

Chlorpromazine, when used concomitantly with propranolol, results in increased pla levels of both drugs.

Antipyrine and *lidocaine* have reduced clearance when used concomitantly propranolol.

Thyroxine may result in a lower than expected T_3 concentration when used concomit with propranolol.

Cimetidine decreases the hepatic metabolism of propranolol, delaying elimination increasing blood levels.

Theophylline clearance is reduced when used concomitantly with propranolol.

CARCINOGENESIS, MUTAGENESIS, IMPAIRMENT OF FERTILITY. Long-term studie animals have been conducted to evaluate toxic effects and carcinogenic potential. In month studies in both rats and mice, employing doses up to 150 mg/kg/day, there wa evidence of significant drug-induced toxicity. There were no drug-related tumorigenic eff at any of the dosage levels. Reproductive studies in animals did not show any impairme fertility that was attributable to the drug.

PREGNANCY. Pregnancy Category C. INDERAL has been shown to be embryotoxi animal studies at doses about 10 times greater than the maximum recommended human d

There are no adequate and well-controlled studies in pregnant women. INDERAL shoul used during pregnancy only if the potential benefit justifies the potential risk to the fetus.

NURSING MOTHERS. INDERAL is excreted in human milk. Caution should be exerci when INDERAL (propranolol HCl) is administered to a nursing woman.

PEDIATRIC USE. Safety and effectiveness in children have not been established.

ADVERSE REACTIONS. Most adverse effects have been mild and transient and have ra required the withdrawal of therapy.

Cardiovascular. Bradycardia, congestive heart failure, intensification of AV block, hypot sion; paresthesia of hands; thrombocytopenic purpura; arterial insufficiency usually of Raynaud type.

Central Nervous System. Light-headedness, mental depression manifested by insom lassitude, weakness, fatigue, reversible mental depression progressing to catatonia, vis disturbances, hallucinations, vivid dreams, an acute reversible syndrome characterized disorientation for time and place, short-te memory loss, emotional lability, sligh clouded sensorium, and decreased per mance on neuropsychometrics. For immedi formulations, fatigue, lethargy and vi dreams appear dose related.

Gastrointestinal: Nausea, vomiting, epig tric distress, abdominal cramping, diarrh constipation, mesenteric arterial thrombo ischemic colitis.

Allergic: Pharyngitis and agranulocyto erythematous rash, fever combined with a ing and sore throat, laryngospasm and resp tory distress.

Respiratory: Bronchospasm.

Hematologic: Agranulocytosis, nonthrombocytopenic purpura, thrombocytopenic purpu

Auto-Immune. In extremely rare instances, systemic lupus erythematosus has be reported.

Miscellaneous. Alopecia, LE-like reactions, psoriasiform rashes, dry eyes, male impoten and Peyronie's disease have been reported rarely. Oculomucocutaneous reactions involv the skin, serous membranes and conjunctivae reported for a beta blocker (practolol) have been associated with propranolol.

DOSAGE AND ADMINISTRATION. INDERAL LA provides propranolol hydrochloride sustained-release capsule for administration once daily. If patients are switched from INDE Tablets to INDERAL LA Capsules, care should be taken to assure that the desired therape effect is maintained. INDERAL LA should not be considered a simple mg-for-mg substitute INDERAL. INDERAL LA has different kinetics and produces lower blood levels. Retitration m be necessary, especially to maintain effectiveness at the end of the 24-hour dosing interva

HYPERTENSION — *Dosage must be individualized.* The usual initial dosage is 80 INDERAL LA once daily, whether used alone or added to a diuretic. The dosage may increased to 120 mg once daily or higher until adequate blood-pressure control is achiev The usual maintenance dosage is 120 to 160 mg once daily. In some instances a dosage of 6 mg may be required. The time needed for full hypertensive response to a given dosage variable and may range from a few days to several weeks.

ANGINA PECTORIS — *Dosage must be individualized.* Starting with 80 mg INDERAL once daily, dosage should be gradually increased at three- to seven-day intervals until opti response is obtained. Although individual patients may respond at any dosage level, average optimal dosage appears to be 160 mg once daily. In angina pectoris, the value a safety of dosage exceeding 320 mg per day have not been established.

If treatment is to be discontinued, reduce dosage gradually over a period of a few weeks (WARNINGS).

MIGRAINE — *Dosage must be individualized.* The initial oral dose is 80 mg INDERAL once daily. The usual effective dose range is 160-240 mg once daily. The dosage may increased gradually to achieve optimal migraine prophylaxis. If a satisfactory response is obtained within four to six weeks after reaching the maximal dose, INDERAL LA therapy sho be discontinued. It may be advisable to withdraw the drug gradually over a period of seve weeks.

HYPERTROPHIC SUBAORTIC STENOSIS — 80-160 mg INDERAL LA once daily.

PEDIATRIC DOSAGE — At this time the data on the use of the drug in this age group are toc limited to permit adequate directions for use.

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Diabetic Ketoacidosis: Changing Views of Treatment

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In 1977, a review of the treatment of diabetic ketoacidosis (DKA) was published in this journal.[1] To focus on the therapy of this condition, and to develop a historical perspective on the treatment for DKA, consider first a patient recently evaluated in the emergency room at Wishard Memorial Hospital:

A 24-year-old male with a 6-year history of insulin-dependent diabetes mellitus and one previous episode of DKA, had an upper respiratory infection with a two to three day history of excessive urination and thirst. He also gave a one-day history of nausea and vomiting. In the ER, he was semicomatose with 4+ glucose and heavy acetone in the urine. His capillary blood glucose was > 400 mg/dl and serum ketones were positive at 1:16 dilution. A diagnosis of DKA was made and treatment begun. Subsequent laboratory measurements confirmed hyperglycemia with metabolic acidosis. Serum insulin levels prior to therapy were 22 μU/ml (Normal = 15-60 μU/ml).

Such a typical case of DKA occurs all too often. How and why does this life-threatening illness happen? From a biochemical standpoint, there are two results of insulin deficiency and catabolic hormone excess, i.e., increased glucagon, catecholamines, etc. (*Fig. 1*). Hyperglycemia, due to decreased peripheral glucose uptake and increased hepatic glucose production, results in "osmotic consequences" with excessive diuresis and free water loss, stupor and coma. The fluid, electrolyte, and central nervous system manifestations of DKA are primarily due to these hyperglycemic/osmotic perturbations. The "metabolic consequences" results from accelerated lipolysis and delivery of free fatty acids to the liver

with ketone body production which exceeds utilization and excretion.[2,3] Acidosis with hyperventilation and Kussmal respiration, and perhaps acute gastrointestinal symptoms, are the consequences of this metabolic process.

In any diabetic patient, either "consequence" may dominate. Thus, in nonketotic hyperosmolar coma, the osmotic components are preeminent.[4] In diabetic youngsters with acute decompensation, only moderate hyperglycemia with striking metabolic abnormalities, i.e., ketoacidosis, may be observed.[5] Recent studies indicate that the hepatocyte mitochondrion may be the "triage site" determining the degree of ketoacidosis and thus the severity of the hyperglycemia.[6] In most adults with DKA, a mixture of osmotic and metabolic effects is most often observed.

For the remainder of this discussion, we will examine (1) present treatment approaches for DKA; (2) the evolution of the therapy for DKA; and (3) the future for DKA, i.e., identify areas where one can have additional impact on the morbidity and mortality associated with DKA, for there is evidence that DKA may be largely preventable.

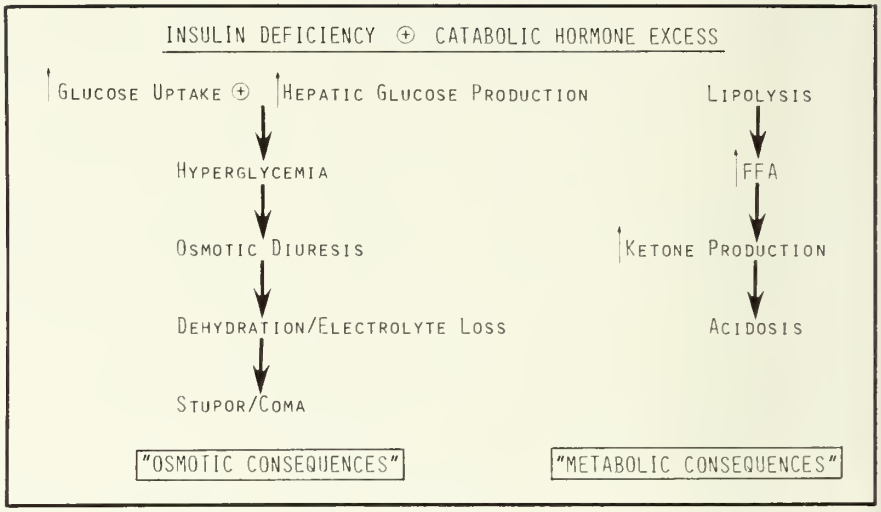


FIGURE 1

Present

What do we do now with DKA? As outlined in *Table 1*, the principles are fairly simple: 1) supply what the patient is missing—an adequate amount of insulin; 2) replace what the patient has lost during the development of DKA-fluid and electrolytes; and 3) identify the precipitating event so the patient would not develop DKA should this event recur.

Studies indicate that a plasma insulin concentration of between 100 and 200 μU/ml (a concentration which correlates with pancreatic delivery of 6 to 10 units of insulin per hour to the peripheral blood stream) will achieve desired biological actions—inhibition of lipolysis, hepatic glucose production and ketogenesis; and increased peripheral glucose uptake (*Fig. 2*). Goals would be to: 1) achieve this concentration of insulin quickly; and 2) sustain it.

Presently, many physicians use the so-called "low dose insulin infusion" technique to administer insulin, a program which is both safe and effective. Upon the diagnosis of DKA, one would mix 50 units of regular insulin in 500 ml. of normal saline and then deliver the insulin at a rate of 2 ml/min. (The first 25-50 ml. of this solution should be discarded as insulin will be absorbed to non-specific sites on i.v. tubing, etc.). This program would deliver 12 units/hour and quickly achieve and sustain insulin concentrations of 100 to 200 μU/ml. Other treatment schemes, using intramuscular or initial bolus insulin are also effective.[7,8]

Subsequently, one would continue the insulin infusion until the blood glucose averaged 250 mg/dl. If the pH is > 7.3 in the absence of serum ketones, subcutaneous regular insulin then could be initiated. More likely, despite plasma glucose concentrations of 250 mg/dl, a slight degree of acidosis persists in association with hyperchloremia.[9] Continuing the insulin infusion at a reduced rate, and decreasing saline while administering D5W to prevent hypoglycemia would be appropriate under these circumstances.

TABLE 1
Treatment of DKA: Principles

1. Supply Missing Defect
2. Replace Deficits
3. Identify Precipitating Events

Most patients with full-fledged DKA have deficiencies as follows: water - 50-100 mg/kg; Na - 7 Meq/L; K - 3-5 Meq/L. A program for fluid replacement is as follows: normal saline is given for the first two hours to expand intravascular volume (*Table 2*). By four hours, half normal saline with D5W is usually begun. At this time, controlling tonicity takes precedent over volume replacement. Furthermore, the blood glucose has decreased to the 250-300 mg/dl range. Yet, as discussed earlier, one must continue insulin to control ketogenesis. Thus, D5W is necessary to prevent hypoglycemia. Whatever the formula for fluid administration, clinical evaluation of the patient is important to prevent serious overhydration.

A typical response to this therapeutic approach is depicted in *Fig. 3*. Note that even before insulin could be administered, the patient's plasma glucose decreased with saline only—underlying the importance of fluid

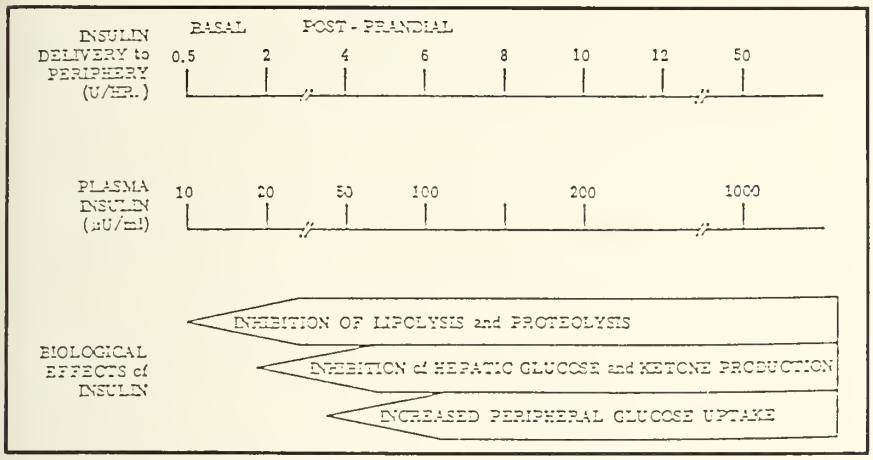


FIGURE 2: Insulin metabolism and effects.

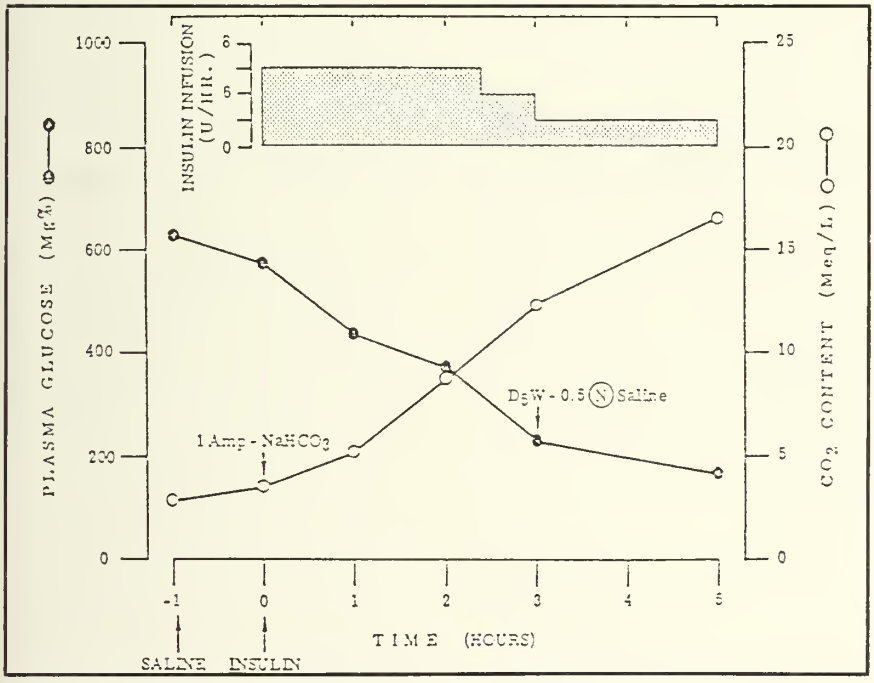


FIGURE 3: DKA-treatment.

TABLE 2
Fluid Replacement in DKA

Hours of Treatment	Fluids
1st 2	2L. of Normal Saline
Next 4	2L. of 0.45% Saline (D_5W - 0.45% Saline if Glucose 250-300)
Next 8	2L. of D_5W - 0.45% Saline (Frequently Some Fluids by Mouth.)

therapy. Upon institution of insulin (7 units/hour), there was a predictably greater decrease in plasma glucose and increase in bicarbonate, even though correction of acidosis lagged behind improved glucose values.

All patients with DKA lose potassium, with subsequent total body potassium deficiency. The key to potassium replacement is when to begin, not if, and this decision is based upon the initial serum potassium (*Table 3*). If the initial potassium value is high (due to intracellular acidosis with movement of K + into the intravascular space), one waits a few hours until the plasma glucose begins to fall and urine flow is established. Potassium is then replaced, one-half as KCL and one-half as potassium phosphate. If the initial serum potassium is low, there is profound total body potassium depletion which counterbalances the tendency of acidosis to cause hyperkalemia. As soon as the acidosis and hyperglycemia are corrected the total body potassium deficiency will make itself manifest with potential serious clinical problems. Thus, under these circumstances, potassium replacement needs to be begun immediately, or else severe hypokalemia will eventuate.

In terms of acidosis, ketone bodies dissociate almost completely and, thus, result in profound metabolic acidosis. To correct the acidosis, insulin, fluids and electrolyte replacement will suffice in most cases in an effective and safe manner. Withhold bicarbonate therapy unless the pH is less than 7.0 or the patient is hypotensive. Under these circumstances lactic acidosis compounds the ketoacidosis and may require some bicarbonate for initial correction. However, one ampule (50 meq) of intravenous bicarbonate would be sufficient to minimize the effects of acidosis.

This approach to the treatment of DKA has resulted in improved survival with DKA.[10] Two questions, however, remain: 1) Why has there been improvement in our management of DKA, i.e., how did treatment programs evolve into our present regimens, par-

TABLE 3
Potassium Therapy in DKA

Initial Serum K	Replacement	Time
High	KCL (20 Meq/L.)	3-4 hrs (Glucose ↓; Urine ↑; [K] Begins ↓)
	Neutral PO4 (20 Meq/L)	
Normal	" " "	1-2 hrs (Glucose ↓; Urine ↓)
Low	" " "	Immediately

ticularly in regard to insulin therapy? and 2) How can we do better, i.e., what are future approaches to the treatment and prevention of DKA?

Past

What was it like to have DKA before, during and after the initial use of insulin in 1922? In 100 A.D., the Greek physician, Aretaeus, systematically described DKA, emphasizing the "melting down of the flesh." In 1886 at the Bradshawe Lecture, Dr. Dreschfeld classified cases of diabetic coma into three groups, the third being where "dyspnea was a most marked symptom followed by coma and where the breath and urine showed an odor of acetone and the urine contained a peculiar body. It affects chiefly the younger persons and comes early in the course of diabetes".[11]

Treatment instructions were simple: "Patients should be forbidden active exercise and avoid mental worry and excitement. Obstinate constipation should be attended to. Intravenous injection of phosphate of soda, chloride of soda and bicarbonate of soda have delayed the fatal event for a few hours".[11]

In 1889, Drs. Minkowski and von Mering made perhaps the single most important contribution to our understanding about diabetes mellitus with the observation that total removal of the pancreas from a dog resulted in glucosuria.[12] In the early 1900s, however, this academic observation was of no practical importance. During these years, Dr. Frederick Allen was a leading academic diabetologist whose treatment program consisted of extreme caloric and carbohydrate restriction. While beneficial for overweight diabetics, young patients with early DKA also had their lives prolonged but at the expense of severe weight loss and inanition.[13]

Consider a case of DKA in 1914 (eight years before the discovery of insulin), a young man who was treated by Dr. Elliott Joslin, already well known for his expertise in diabetes. "L.S., age 26, had diabetes for two years, and had lost 40 lbs. He was excessively thirsty, but vomited whatever he drank. On admission, the patient was drowsy and hypotension of the eyeballs was noted."[14]

The treatment? "Provide a special nurse for the patient . . . Keep the patient in bed and warm. Avoid loss of calories . . . Move the bowels by one or more enemas . . . Give 1,000 cc. of liquid within each six hours. Avoid alkali . . ."

Two points of emphasis: 1) care of the bowels was very important; and 2) the importance of fluid therapy was already appreciated in 1914.

While this treatment may now seem quite primitive, in fact, the mortality from DKA even prior to the discovery of insulin had decreased from 64% to 42%,[15] presumably due to early recognition, "starvation therapy," or fluid administration. And what was the impact of insulin on DKA? The discovery of insulin itself, as recently described by Professor Michael Bliss from the University of Toronto, was itself a fascinating event with four main protagonists: Dr. Frederick Banting, a shy surgeon; Dr. J. MacLeod, chairman of Physiology and a well recognized investigator in carbohydrate physiology; Dr. Charles Best, then a medical student working with Banting; and J.B. Collip, Ph.D., professor and chairman of Biochemistry, who purified the pancreatic extract ultimately used in the treatment of DKA.[16]

Leonard Thompson at age 14 was the first person to receive parental insulin therapy. (Actually, Dr. Banting secretly gave the pancreas extract earlier to a diabetic colleague, Dr. Joe Gilchrist, with "no beneficial results," perhaps because the extract was administered orally[16]). Initial use by Banting and Best had little effect on Thompson's blood glucose. Collip then further purified the beef pancreas extract, much to the chagrin and anger of Banting; but Leonard Thompson's diabetes responded.

The academic consequences of these efforts were two publications, the first in 1922 in the *Journal of Laboratory and Clinical Medicine* describing "The Internal Secretion of the Pancreas"[17]; and the second in the 1923 *Journal of the Canadian Medical Association* delineating the effects of pancreatic extracts on the dying diabetic patient, Leonard Thompson.[18]

The "Indianapolis connection" is most interesting and important. Dr. George Clowes, research director at Eli Lilly and Company, sensed from the beginning that something important was happening in Toronto. His interaction with the Canadian investigators was constant, supportive and eventually resulted in Eli Lilly and Company receiving the patent rights to the production of insulin in the U.S. Indeed, at one of the first meetings in Toronto where 11 prominent diabetologists attended to learn about insulin, three of these 11 were from Indianapolis: Drs. Clowes, Page and Walters.

What were the immediate clinical effects of insulin on the treatment of DKA? Consider a case report publish-

ed in 1923, a few short months after the discovery of insulin:

"D.G., age 51, had diabetes for a number of years; in December he took a cold, bronchitis, pneumonia and coma. He was given 5 units of iletin every three hours. Consciousness returned, this was a miracle—a dying comatose patient and consciousness returned . . . We then ran out of iletin and on the sixth day coma developed a second time. Having received a new stock of iletin, 25 units were given in one dose and 10 units every two hours, but the patient died of pulmonary abscesses."[19]

Dr. Foster then summarized his experiences with this new drug, insulin, in 1923 ". . . Until the last year it has not been my good fortune to see recovery from diabetic coma. There are reports in the literature that it is true, that recovery has taken place but with possibly one or two exceptions when coma quite promptly recurred and led to death. Since October 1922, 15 cases of diabetic coma have been treated. Of these, eight recovered and five are still alive. A remarkable occurrence!".[19] And in a brief period of several months, Eli Lilly and Company had developed a major production facility to insure an adequate supply of insulin for all clinicians.

By the middle 1920s, the impact of insulin on mortality from DKA was even more apparent. Dr. R. Lawrence commented: "Five years ago 'The Diabetic Death' would have been a more suitable title for such a book as this than the 'Diabetic Life'. But now modern discoveries, particularly insulin, have completely changed the outlook.[20]

Dr. Elliot Joslin, in his *Diabetic Manual*, suggests that these are the kinds of questions physicians should be asking about DKA: ". . . Has this patient acidosis and is it severe enough for symptoms? How much and how frequently is insulin to be given? 10 - 20 - etc. units every half hour, or every hour?".[21]

Treatment of and survival from DKA had clearly changed, and insulin was now both a routine part of the therapy and the factor felt responsible for decreased mortality. This position received support from an article published in 1945 from the Joslin Clinic called "The Use of Insulin and Abuse of Glucose".[22] Recent cases of DKA were compared retrospectively to patients with DKA treated between 1923 and 1940. The mortality rate had decreased from 12 to 1.6%, and it appeared that the more insulin administered over the first three hours, the lower the mortality.

Furthermore, there was a correlation between the blood glucose and the amount of insulin "required" to correct the DKA. The authors concluded that larger doses of insulin were largely responsible for improved mortality in DKA. This conclusion received additional support by a retrospective British study of DKA which suggested that: 1) the more severe the stupor, the more insulin was required to correct the CNS abnormality; and 2) reduction in mortality from DKA was due primarily to larger amounts of insulin.[23]

As a result of such publications, recommendations for insulin therapy for DKA in the 1950s included 100-400 units of intravenous and/or subcutaneously insulin, given as a bolus dosage and repeated every 2-4 hours.[24,25] Yet the above two studies upon which these recommendations were based: 1) were retrospective and correlational in design; 2) did not insure comparability of study groups in regard to degree of acidosis, hyperglycemia, age, etc.; and 3) most importantly, basically ignored other emerging aspects of therapy for DKA, e.g., aggressive saline and electrolyte administration, antibiotics, etc.

TABLE 4
DKA: Problems with Bicarbonate

1. Hypokalemia
2. Paradoxical CSF Acidosis
3. Cerebral Hypoxia
4. Hypocalcemia Tetany
5. Late Metabolic Alkalosis

In 1974, three papers were published in the *British Medical Journal* which utilized a "low dose insulin" infusion system (6-10 units/hour) in the treatment of DKA.[26-28] This insulin formula elicited several editorials[29-31] including a "Plea for Caution" because there had been no prospective, controlled trials on "low dose insulin" in DKA.[32] While such criticisms could also be directed to the more traditional "high-dose bolus insulin regimen," there are, in fact, several investigations in the mid-1900s which have validated the use of lower but adequate amounts of insulin in the treatment of DKA.[33-37]

Several "lessons" emerge from this historical view of the use of insulin in DKA: 1) treatment programs sometimes happen without rigorous scientific rationale—they just seem to evolve in the understandable excitement about a new therapy; 2) while low dose insulin infusion is reasonable, the purpose is not see "how low you can go." One should administer amounts of insulin to quickly achieve and sustain hormone concentrations of about 200 μU/ml; and 3) treatment of DKA is not only insulin therapy. There are also fluids, electrolytes, acidosis, a precipitating event, and these are all very important.

The evolutionary history of fluid therapy for DKA to a degree mirrors the insulin saga. Clearly, physicians have known about dehydration and DKA for many years. Indeed, dehydration is considered one of the four essential elements in the pathogenesis of DKA.[38] Furthermore, in the treatment of DKA, initial decreases in plasma glucose following therapy are due primarily to expanded intravascular volume and increased renal clearance of glucose.[39]

Thus, fluid replacement in DKA appears to be important, but the scientific basis for the specific amounts and types of fluids is limited. Indeed, the most frequently cited study of fluid and electrolyte balance during DKA was

performed on only two patients![40] Thus, like insulin treatment, fluid replacement recommendations for DKA have evolved and seem both important and effective, even in the absence of rigorous scientific investigations.

Recent experiences with potassium phosphate underscore the lesson that much of the therapy for DKA has "emerged" from clinical experience. Most patients routinely developed hypophosphatemia during therapy for DKA, and concern has been expressed about the "low phosphate syndrome".[41] Thus, recommendations were made to give potassium as phosphates in DKA.[1,42] Recently, two observations should cause us to question these recommendations. First, patients have been described who, during potassium phosphate therapy, developed hypocalcemia and tetany.[43,44] Second, when patients have been randomly assigned to groups receiving identical therapy except for phosphate, clinical outcomes were not different.[45-47] The "low phosphate syndrome" of DKA, therefore, may be more of theoretical concern than a real entity. As a compromise, about one-half of potassium replacement should be with phosphate.

Finally, the "natural history" of therapy for acidosis in DKA is another example of the evolution of a treatment protocol. It is difficult to document clinical consequences of acidosis unless the pH is < 7.0 and/or there is associated hypotension. Furthermore, there are a number of theoretical concerns with the inappropriate administration of alkali (*Table 3*). Finally, a recent study of the effects of sodium bicarbonate therapy on various clinical outcomes did not confirm beneficial effect of alkali.[48] Thus, in most cases of DKA, allow fluids, insulin and time to correct the acidosis.

Future

What is the present situation regarding mortality from DKA? Forty thousand patients are admitted yearly with DKA in the United States, and about 10% or 4,000 people will die.[38,49] While this represents a dramatic improvement over the past 60 years, the question remains—how can we further reduce mortality? Two approaches exist: 1) "fine tune" the therapy presently being utilized; and 2) prevent DKA. In terms of the first possibility, DKA is a complicated metabolic disorder, and therapeutic interventions are complex. Thus, one must pay very close attention to the principles and practices of insulin, fluid, electrolyte and acidosis treatment. Particularly in regard to fluid therapy, inadequate replacement seems to be a most common problem which deserves a more aggressive approach. Conversely, possible pathological fluid shifts resulting in hypoxia from pulmonary edema[50] and/or cerebral edema[51] need to be recognized. The details of treatment (including a meticulous clinical record/log) must be followed.

To make a real significant impact on the morbidity and mortality of DKA, however, the issue of prevention must be addressed (*Table 1* - Principle 3). For example, experimental approaches include the use of pharmaceutical agents to block catabolic hormones.[52,53] But perhaps the most fertile area to examine is the health care system, itself.

That the medical care system can have an effect on the prevention of DKA is supported by the study of Miller, *et al.*[54] in which changes in a clinic environment (installation of a patient phone service with health professionals available to answer diabetes questions) resulted in a reduction in emergency room visits and hospital admissions for DKA. Present concepts of the prevention of DKA indicate that both a *responsible* patient and *responsive* health care system are necessary to limit the occurrence of this acute diabetic condition.[38,49,55]

In a recent preliminary chart audit of patients admitted to Wishard Memorial Hospital for DKA, several interesting and potentially important facts emerged: 1) most patients had a long history of diabetes mellitus, and many had had previous episodes of DKA; 2) the majority of patients were already part of a clinic system. However, they did not contact the clinic during the early phases of DKA, but came to the emergency room immediately prior to hospitalization; and 3) while symptoms of developing DKA had been present for several days prior to hospitalization, patients did not make adjustments in their diabetes treatment program at home to prevent DKA. These observations suggest that unless changes occur in the health care system and/or locus of patient responsibility, reduction in the frequency and mortality of DKA will not be fully realized.

Conclusion

To a considerable degree, the therapy of DKA has evolved because it seems "reasonable"—not necessarily because there are rigorous scientific studies that validate treatment approaches. The outcome of DKA is clearly better for the patient, and effective therapeutic modalities exist to treat this condition. A further decrease in morbidity and mortality ultimately will depend upon prevention. We have to examine our support/education system to encourage people to contact the health care facility in the early phases of DKA and/or manage their pending DKA at home in a more effective manner.[56]

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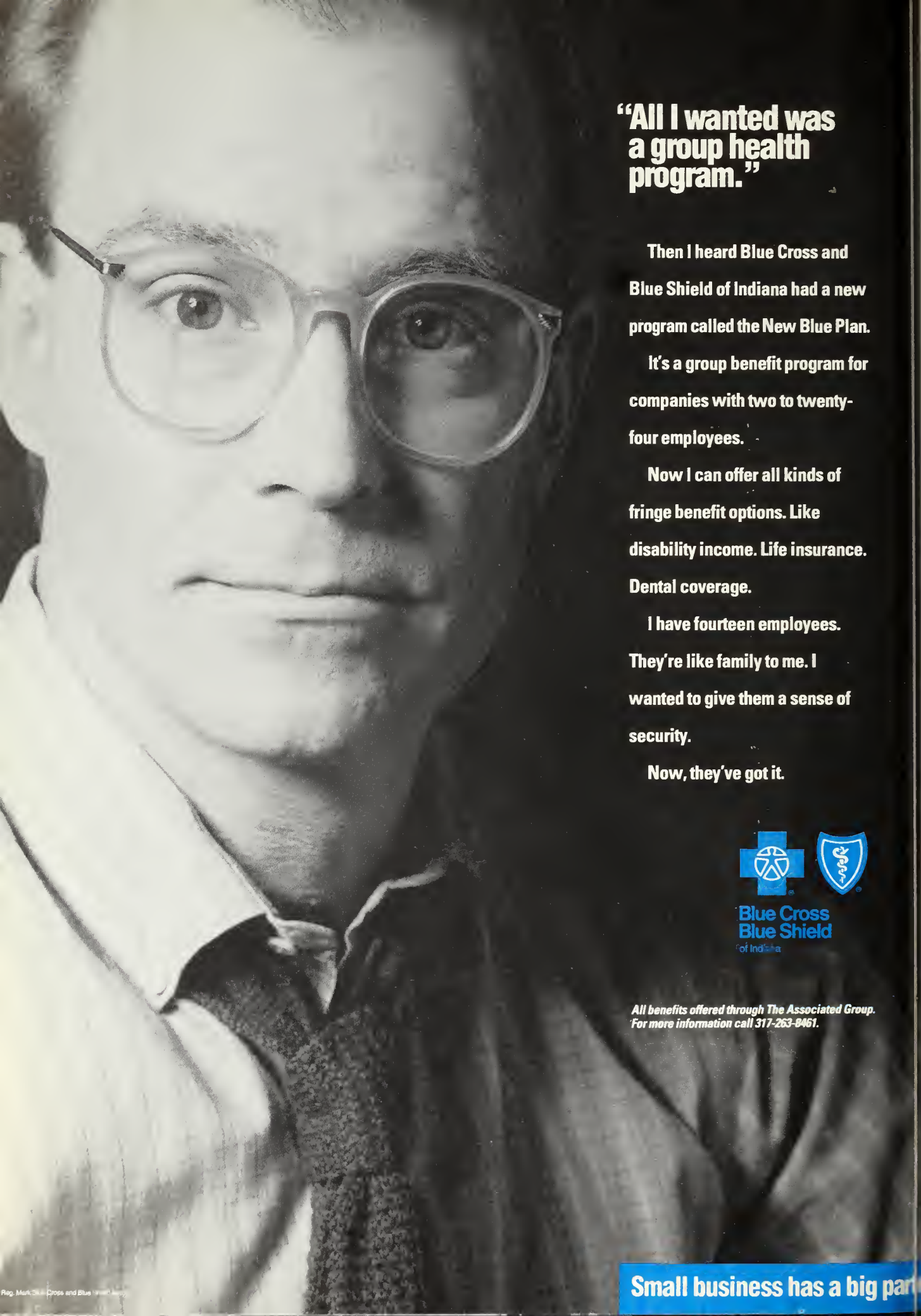
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Acute Appendicitis Secondary to an Obstructing Carcinoma of the Cecum: A Case Report

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Abstract

Appendicitis usually occurs in those who are in their teens and twenties; however, occasionally it may be diagnosed in patients over 40 years of age and also the very young. The usual signs and symptoms are right lower quadrant pain and rebound tenderness, anorexia, 10,000-15,000 WBC count and temperature of 100-102° F. A serendipitous finding of carcinoma of the cecum which produced appendicitis by its strategic location in an older patient is presented. The importance of palpating the cecum at the time of appendectomy in any patient over 40 years of age is reinforced in this case presentation.

ACUTE APPENDICITIS was described by Fitz[1] more than 100 years ago in his classic article in which he advocated early operative treatment based on the signs and symptoms of perforation and abscess formation secondary to inflammation of the appendix. More recently, Ravitch[2] also suggested an aggressive approach in suspected cases of appendicitis because of the increased morbidity associated with perforation.

The common pathological entity which results in acute appendicitis is obstruction to the appendiceal lumen, most frequently due to a fecalith.[3] The obstruction results in increased intraluminal pressure with subsequent edema and necrosis of the appendix mucosa. This in turn results in bacterial migration through the wall of the appendix followed by polymorphonuclear (PMN) leukocytes, setting the stage for infection and subsequent abscess formation. In fact, pathological diagnosis of appendicitis is based upon the transmural presence of PMNs at microscopic examination of a cross-section of the appendix.

Thus, this chain of events can be set in motion by anything that can produce obstruction to the free drainage of mucus from the appendiceal lumen. In this report, the obstruction was secondary to a cecal carcinoma which was quite fortuitous as far as the patient was concerned. The strategic location of this cecal carcinoma resulted in a very early diagnosis and treatment of the lesion at the time of appendectomy. The net result is an expected five-year survival of 80% of a Duke's B-1 lesion vs. a 30% five-year survival for a Duke's C lesion.

Any patient who presents with epigastric pain localizing to the right lower quadrant followed by anorexia, vomiting and finally right lower quadrant guarding and rebound should be suspected of having appendicitis[4] no matter what the patient's age may be, especially if the temperature is 100-102° F. and the white blood cell count 10,000-15,000. Over a surgeon's lifetime, the diagnostic accuracy in appendicitis is approximately 80-85%.[5] However, it is far better to be a little aggressive than too conservative and only take the patient to the O.R. when the diagnosis is obvious, not only to the physician but the patient as well.

This report deals with a case of appendicitis in a patient who was operated upon because of persistent right lower quadrant pain and guarding, associated with anorexia and normal WBC and temperature. At the time of surgery the patient did indeed have acute appendicitis, but serendipitously a carcinoma of the cecum was found that was responsible for appendicitis by its strategic location over the appendiceal lumen, producing obstruction to mucus drainage from the appendix into the cecum.

Case Report

A 59-year-old man presented to his family physician 36 hours after the onset of periumbilical pain followed by vomiting and some right lower quadrant tenderness but no rebound. Because the patient appeared to have improved since the onset of his symptoms, a diagnosis of mesenteric adenitis and possible cecal diverticulitis was entertained. Consequently, the patient was treated with antibiotics and improved somewhat but his right lower quadrant pain never completely resolved.

Over the next two weeks, the patient developed significant tenderness and guarding in the right lower quadrant and was referred for surgical consultation 17 days after the onset of his abdominal pain.

P.M.H.—No allergies and patient does not smoke. A left thyroid lobectomy and left inguinal hernia repair were performed previously. Patient

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takes Tagamet, Meclomen, Nitrostat, Isordil, Inderal, Lasix, Anaprox and a multivitamin. R.O.S.—Positive findings included a history of angina, hypertension, gastritis, duodenitis, lumbosacral strain and degenerative arthritis. P.E.—Ht. 6′1″. Wt. 224 lbs. BP 148/76. P. 82. R. 16. T. 98.8° F. The positive findings were localized to the abdomen revealing right lower quadrant guarding and rebound with decreased bowel sounds. No abdominal masses were palpable. Rectal examination revealed a normal prostate and RLQ anterior tenderness. LAB—WBC 9,000 with 63 PMNs and no bands. UA negative.

On the basis of persistent right lower quadrant tenderness, guarding and anorexia, a diagnosis of acute appendicitis was made; normal white blood cell count was felt to be due to antibiotics the patient was taking for the past several days. Through a right lower quadrant muscle-splitting incision, a diagnosis of acute appendicitis was confirmed. However, a cecal mass was palpated; a biopsy revealed an invasive adenocarcinoma arising in a preexisting polyp with evidence of invasion into the muscularis. By simply extending the surgical excision medially and laterally, good exposure was achieved and a right hemicolectomy was performed.

Postoperatively, the patient had an uneventful course and was discharged from the hospital in approximately five days. A pathological examination revealed that the patient had no lymph node involvement and the lesion was staged to be a modified Duke's B-1. Entire metastatic work-up was normal. The patient's CEA the day after surgery was 19; three months after his surgery it was 0.5.

Discussion

Successful resolution of this patient's potentially lethal problem can be attributed to the physicians' persistence and close follow-up and finally surgical intervention when it became reasonably certain that the patient might have appendicitis. It is far better to be a little aggressive in pursuing a diagnosis than too conservative and allow the disease process to become life-threatening. A diagnosis of appendicitis is best made on the basis of the patient's clinical history and laboratory findings. At times, ultrasound examination and barium enema[6,7] may also be of value, especially in women when one has to consider possible ovarian pathology. In our case, a barium enema was not performed since the decision was made to operate because of the persistence and localized nature of the right lower quadrant pain associated with anorexia. The normal white blood cell count had to be disregarded, since the patient had been taking antibiotics for more than a week prior to surgery. Also, the fact that appendicitis in an older patient population is more progressive had also been taken into consideration.[8]

A serendipitous finding of an early cecal carcinoma in this case reinforces the need for a thorough palpation of the cecum when performing an appendectomy in a middle-aged or elderly patient. Had the cecum not been palpated in this case, the carcinoma would have gone undetected for a number of months or even years until anemia, weakness and a RLQ mass would have developed, suggesting a carcinoma of the cecum.[9] Other uncommon pathological entities producing acute appendicitis are incarcerated inguinal hernia[10] and endometriosis.[11]

Summary

A quadric of a.) right lower quadrant guarding and rebound, b.) anorexia, nausea and/or vomiting, c.) white blood cell count of 10,000 to 15,000 and d.) temperature of 100-102° F., is a classical presentation for acute appendicitis. Many variations of the preceding four signs and symptoms occur, especially in the aged population and those patients who had been taking antibiotics for various reasons. *Persistence* of right lower quadrant pain and anorexia, in spite of various therapeutic maneuvers, is significant and may warrant an exploration as it did in this case. At surgery, the cecum in any patient over 40 should be palpated thoroughly regardless of whether or not the appendix is inflamed. An associated cecal carcinoma may be safely resected at that time without a bowel preparation. Use of intraoperative antibiotics during such a procedure and meticulous surgical technique are essential in minimizing complications.

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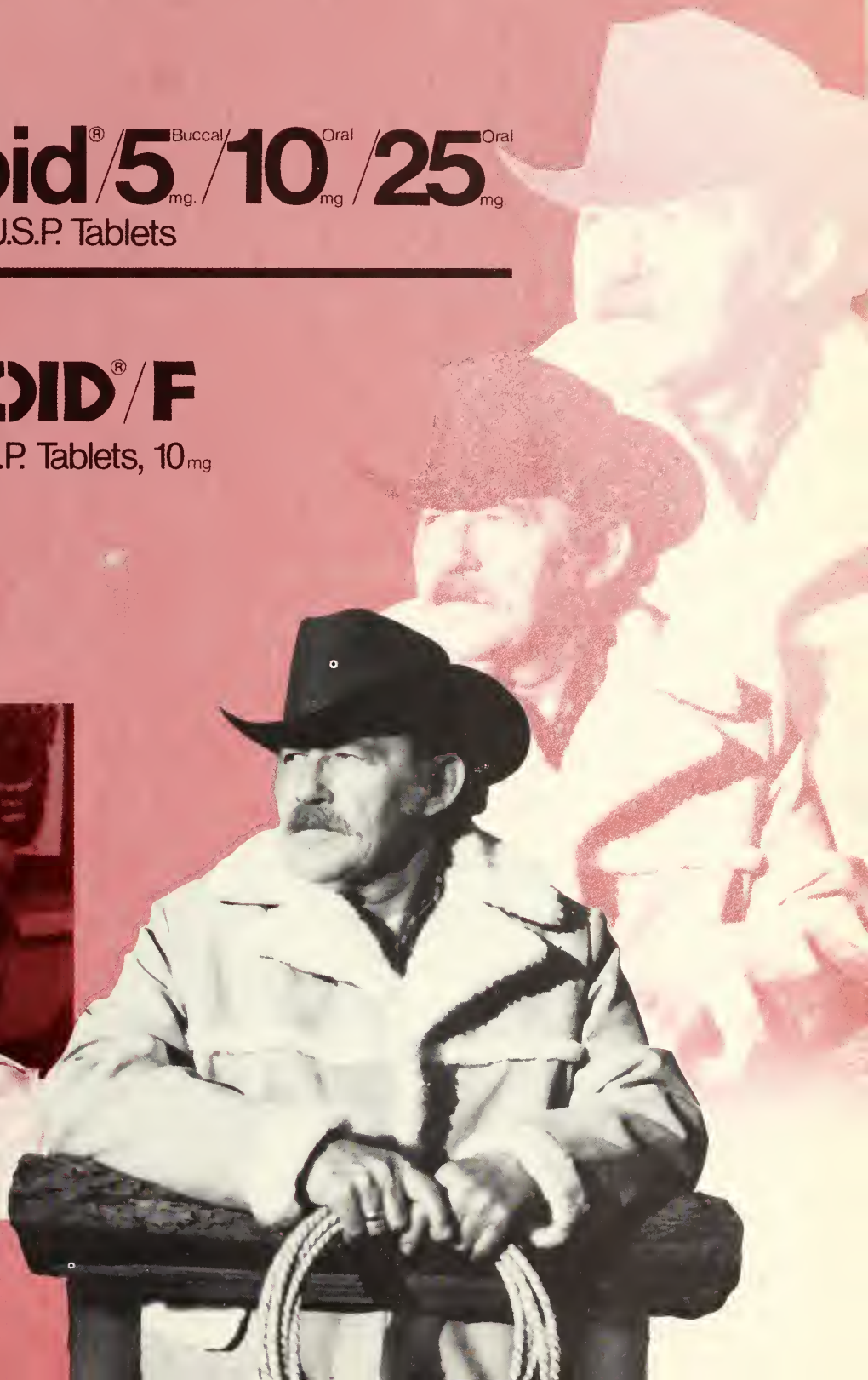
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La Hierarchie de la Fourchette et la Maladie Coronarienne

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TABLE
Comparison of Actual Diets with the Alternative Diet

	Average Diet in USA	Average Diet in France	Alternative Diet
Fat	40%	42%	20%
Protein	15%	15%	15%
Carbohydrate	45%	43%	65%

WHEN AMERICANS travel to France, they easily get the impression that the French are by-and-large overeaters. The average American visitor to the various temples of *La Gastronomie* assumes that *de Riguer* most meals must contain three or four full courses. These often lead to *la crise de foie*, cured only by bed rest and large doses of Vichy water.

It, thus, may come as a surprise to learn that ischemic heart disease is two to three times less common in France as in the U.S.[1] And, on average, the French live longer, too! The explanation for this surprise appears to lie elsewhere than in the food: The average American diet is similar in cholesterol content (537 mg) to that of the French diet (588 mg).

Saturated fat intake per day is also similar in the two countries: 52.5 grams in the USA versus 58.2 grams in France. The total dietary fat (139 grams per day in the U.S. versus 148 grams per day in France) is also about the same.

As the *Table* shows, neither the American nor the French diet resembles the "alternative diet" recommended by nutritionists interested in the dietary prevention of heart disease. Hallgren, *et al*[2] state that meat consumption in France is lower than that in America (125 grams per day versus 280 grams per day) but the 1980 FAO food balance sheets state that total meat consumption in 1983 was 274 grams per day in France versus 312 grams per day in the U.S.

Alas, the low ischemic heart disease death rate in France cannot simply be attributed to a low cholesterol or saturated fat intake. In fact, the cholesterol and saturated fat intake in milligrams per day is about the same in France, Switzerland, Norway, Belgium, West Germany and Finland. Yet the cardiac death rate in France is only 20-50% of these other European countries.[3]

What about the potential beneficial effects of wine? Whatever the mechanism whereby ethanol affects HDL and atherosclerosis, a "protective" action has been observed in several populations of moderate but not heavy drinkers.[4,5,6,7] (*See Figure 1*).

While France has its share of alcoholics (6% of deaths have been attributed to alcoholism, 2 million Frenchmen are alcoholics, and 15 million are heavy consumers according to Delamaire),[8] it is more typical that a Frenchman regularly drinks judicious amounts of alcohol—usually red wine. The average consumption is three glasses of wine, or 30-40 grams of alcohol, per day. This is similar to the amount shown to increase apolipoprotein A-1, that is 37.8 +- 13.9 ml of alcohol per day.[7] 39% of French women and 66% of French men drink alcohol regularly.[9]

Ardagh[10] states that the alcohol consumption per person has declined by almost 20% since 1951 in France, but the French are still the world's heaviest drinkers (of mostly red wine). And if the French are the world record-holders regarding wine consumption, they also hold the record for the amount of mineral water consumed. While epidemiologic studies associating water hardness and mortality rates from cardiovascular diseases are controversial, some evidence suggests that the death rate from ischemic heart disease is increased in areas with soft drinking water in the U.S., Britain, and Canada.[11] While individuals who drink soft water could still be ingesting adequate amounts of calcium and magnesium,[11] the USDA 1985 consumption survey showed that most Americans consumed less than the 800 mg RDA for calcium.

What about other risk factors? Do the French have less hypertension than Americans? In a word, no. At least 20% of the French between 30 and 70

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years of age suffer from hypertension.[12] The incidence of hypertension in adults is, thus, lower in the U.S. (13.7% in 1983).[12]

Do the French smoke less? No, too! About 43% of men and 16% of women smoke regularly in France. In the U.S. about 36% of adult males and 29% of adult females smoked cigarettes in 1979, according to Flenley.[13] Of interest, in 1979 one-half of all cigarettes manufactured in France contained less than 15 mg of tar while only 30% of Americans who smoked chose cigarettes that had less than 15 mg of tar. The market share of low tar cigarettes in the U.S., however, is on the increase.[14] Indeed, in 1982, the sales weighted average tar deliveries of cigarettes was 11-16 mg in the U.S. and 17-22 mg in France.[15]

Dietary crude fiber intake, according to the FAO, is somewhat higher in France (6.3 grams per person per day) than in the U.S. (5.9 grams per person per day).

The amount of sugar consumed by the French is also relatively low and getting lower (20.4 kg per year in 1970, versus 13.8 kg per year in 1982).[9] Americans, in contrast, consume an average of 50 kg per year of sugar.[11] Recently, a positive correlation between the incidence of ischemic heart disease and sucrose intake in 29 different countries has been shown.[2]

Of course, it is just possible that the death rate from ischemic heart disease in France is not as low as it is reported. The French physicians certifying the cause of death tend to prefer a broad diagnosis, e.g., ICD Rubric 428 "Heart Diseases," where an American physician might not hesitate to record a more specific diagnosis in a similar case such as ischemic heart disease (ICD 400-411).[16]

Even in the U.S., however, cardiovascular disease epidemiology is hampered by both imprecise and variable measures of cardiac disease. "For example, it is likely that the epidemic of heart disease in the early and middle parts of this century may



FIGURE: The liters of pure alcohol consumed per inhabitant per year in 1981[8] vs. the age standardized mortality rate from heart disease per 100,000 in 1980 for men[12] is depicted. The negative correlation between the amount of alcohol consumed and the death rate from ischemic heart disease appears to be present. The one exception to this trend appears to be Japan.

be attributable, in part, to changing fashions in signing death certificates. This is suggested by the decline in deaths described to nonischemic heart disease that occurred between 1950 and 1968, and the concomitant rise in ischemic heart disease death. Conversely, other forms of heart disease rose by 47% between 1968 and 1976 in the United States, while ischemic, rheumatic, and hypertensive heart disease fell by over 20%. How much of these changes can be ascribed to changing fashions in signing death certificates is difficult to assess, and this is further complicated by the changes in the International Classification Disease Codes, which occur every 10 years."[11]

Other data sources besides those already quoted, however, seem to corroborate the low incidence of cardiovascular disease in France, e.g., the Paris prospective study in myocardial infarction.[1] Also, Ducimetiere and Bingham[17] state that in France ischemic cardiac disease accounted for 11% of male deaths and 4% of female deaths between the ages of 45-64. Comparable figures for the U.S. at this time were 36% of male deaths and 21% of female deaths. These authors go on to say that if all ambiguities regarding the way all cardiac deaths are classified are

eliminated, the relative risk of dying of heart disease in the U.S. versus France is still 2-1 for men and 2.4-1 for women. Cheng[12] likewise confirms that age standardized mortality per 100,000 from heart disease in 1980 was very low in France (213 for men and 64 for women) compared to that in America (498 for men and 180 for women).*

Perhaps a genetic difference may protect the Frenchmen. The Paris prospective study showed a 20% higher mean HDL cholesterol level in French Parisian policemen versus the U.S. white male level. However intriguing it may be to speculate that some genetic difference exists between Americans and Frenchmen, the fact is that both populations are rather heterogeneous. Indeed, striking regional differences exist with regard to the incidence of ischemic heart disease within both countries.[18,19]

Assuming, therefore, that the French really do have a lower incidence of ischemic heart disease, what can we conclude? The French appear to more regularly drink moderate amounts of alcohol and larger quantities of mineral water. They also appear to eat slightly more crude fiber and consume less sugar. They smoke as much tobacco and eat as much cholesterol and saturated fat as Americans. And the French may actually have more hypertension than Americans.

In the absence of migration studies (regarding the incidence of coronary disease in Frenchmen who have come to the U.S. or that of ex-patriate Americans in France) the causality of a relationship between the French lifestyle and a lower risk of coronary disease cannot be proven. The negative correlation between the death rate from ischemic heart disease and the average consumption of alcohol per person, however, is hard to ignore.

*The WHO technical report #678, 1982, states that death from coronary heart disease in males age 35-64 per 100,000 in 1977 were U.S. 352, France 106.

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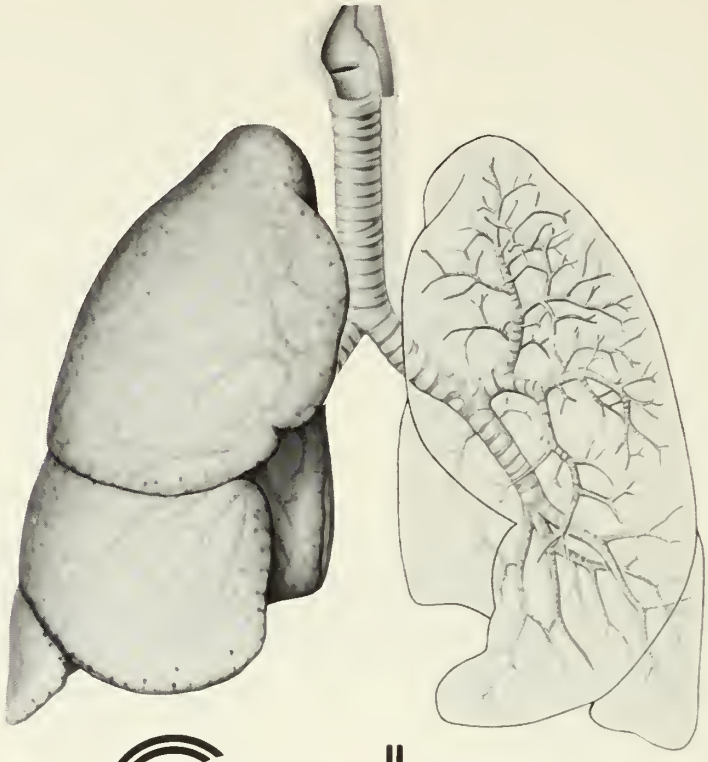
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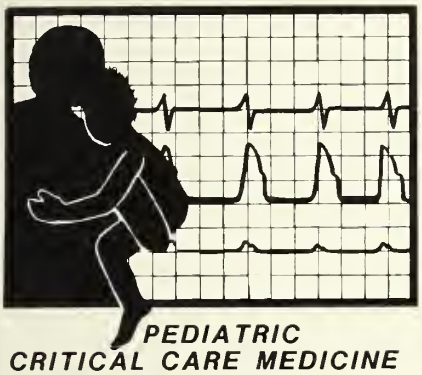
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Neonatology: New Modalities of Treatment



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NEW MODALITIES OF treatment have recently appeared in some intensive care nurseries. All are still considered experimental at this time, although some have demonstrated definite potential for reducing mortality and morbidity of selected neonates and may eventually become standard therapy. Other treatments may not stand up to rigid scientific scrutiny and may eventually be removed from consideration as part of our therapeutic armamentarium. This article reviews some new forms of therapy presently being evaluated.

Extracorporeal Membrane Oxygenation

One treatment that holds definite promise is extracorporeal membrane oxygenation (ECMO). The first reported neonatal use was in 1965 on a small group of premature infants with hyaline membrane disease (HMD).[1] Subsequent reports[2-4] between 1969 and 1975, also on small groups of infants, described no survivors. Bartlett and colleagues[5] reported the first neonatal survivor in 1976. That team continued to treat newborns who had an estimated 10% chance of survival, and reported a 50% survival rate with ECMO. In 1984, Bartlett and co-workers[6] reported an overall survival rate of 80% in term infants with severe persistent fetal circulation (PFC). A recent review of data from nine centers in the United States,[7] including Bartlett's data from the University of Michigan, indicates an overall survival rate of 65% (143/221) as of May 1985.

The technique itself entails use of a membrane oxygenator supplied by a servo-regulated roller pump, with the entire circuit primed with 500 cc of fresh heparinized blood. Blood from the baby is supplied to the oxygenator via a catheter placed in the internal jugular vein and advanced to the right atrium. The arterial cannula is placed in the common carotid artery on the same side and advanced to the entrance of the aortic arch. Diversion of blood through the membrane oxygenator is gradually increased until approximately 80% of the baby's cardiac output flows through the circuit.

When appropriate pH, Pa02 (usually 70-90 mmHg) and PaCO2 are attained, ventilator settings are reduced to low peak inspiratory pressure, rate, and Fi02 to minimize the risk of barotrauma and oxygen toxicity, i.e., bronchopulmonary dysplasia (BPD). Whole-blood activated clotting time is maintained at two to three times normal with continuous heparin infusion. Bypass flow through the ECMO circuit is gradually reduced over a period of days as lung function improves. Eventually, the circuit is disconnected if arterial oxygenation remains adequate when only 10% of cardiac output is being diverted through the circuit or the baby has been on ECMO for seven to 10 days. Once disconnected, the cannulas are removed and the vessels ligated proximally. Two recent articles[7,8] review the technique in detail.

Criteria for the use of ECMO have been fairly consistent around the country and include reversible lung disease such as meconium aspiration pneumonia, PFC or HMD, no evidence of congenital heart disease, failure of maximal medical management (usually 100% oxygen and maximal ventilator therapy), and no more than

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seven to 10 days of prior assisted ventilation (because of the high risk for BPD after prolonged ventilation). The baby must weigh more than two kilograms, be more than 34-35 weeks gestation, and have no evidence of intracranial hemorrhage or severe coagulopathy. There is a high incidence of central nervous system hemorrhage if these criteria are not met.[9] Many centers also have blood gas or ventilator setting criteria that limit the use of ECMO only to those babies at 80-90% risk for mortality.

In addition to excellent statistics for survival, recent reports of follow-up on infants treated with ECMO have been promising. Normal mental function was noted in 71-83% of survivors at one to three years of age. Interestingly, the most recent report by Andres and co-workers[10] found a high incidence of EEG changes at follow-up but without clinical evidence of seizures. The significance of this finding, in light of veno-arterial ligation after ECMO is discontinued, is uncertain. No baby has been reported to have had evidence of a cerebrovascular accident. Few babies have had evidence of BPD after ECMO.

More and more centers around the country are now offering or will soon offer ECMO. It must be used only in an intensive care nursery with neonatology, pediatric surgery, and pediatric cardiology support. A large multidisciplinary team must be available on a 24-hour, seven-day-a-week basis, including nursing personnel trained as ECMO specialists, pump perfusionists, respiratory therapists, and a biomedical engineer. The treatment is expensive, costing up to $50,000, but may be cost-effective if prolonged hospitalization on a ventilator would otherwise be required.

Unanswered questions at this time include whether present criteria allow for optimal use of this therapy and whether easing the requirements will improve survival rates while avoiding unnecessary use. The recent development of experimental ECMO circuits in which heparin is bonded to the circuit tubing may allow pre-term infants to be candidates for ECMO. Also, concern about cost-effectiveness has not been formally evaluated.

Surfactant Replacement

Another new treatment modality that also appears hopeful is surfactant replacement. Since HMD is the major cause of mortality and morbidity among premature infants in the United States, accounting for an estimated 40,000 deaths per year, therapy that can prevent or mitigate the effects of this disease would have a major impact upon survival rates and long-term sequelae of premature infants.

Pulmonary surfactant reduces surface tension and prevents collapse of small airspaces during exhalation. Infants with HMD have a relative deficiency of surfactant leading to progressively worsening atelectasis. For exogenous surfactant to function adequately within the lung, four characteristics appear to be necessary; rapid adsorption along the pulmonary alveolar surface, rapid spreading along this surface, ability to lower surface tension to a level known to exist in the alveolus at expiration, and slow collapse rates of the surface-active film at high surface pressures. All these conditions should be met at 37°C. Interestingly, a recent report[11] compared the surface-active properties of four different surfactants and showed that the clinical responses to instillation of these surfactants were not predictable based upon their properties in the laboratory.

Attempts to provide aerosolized surface-active phospholipids to premature infants with respiratory distress date from the preliminary studies of Robillard, *et al*[12] and Chu and co-workers[13] in the mid-1960s. Both studies with human neonates failed to produce convincing results. Over the next decade there was little pursuit of therapy utilizing artificial surfactant. Other investigators did find that "natural" surfactants derived from animal lungs were effective in animal studies in improving pulmonary function and increasing survival for some of the animals.

Fujiwara and colleagues,[14] after a great deal of laboratory and then animal work, reported in 1980 on the successful use of artificial surfactant in the treatment of 10 infants with severe HMD. Eight of the 10 infants survived; the other two died of causes unrelated to their pulmonary disease. The material they used was named surfactant TA and was composed of naturally occurring surfactant lipids and three synthetic lipids. They noted improved oxygenation and alveolar-arterial oxygen gradients, lower peak inspiratory pressure requirements, and marked improvement in the radiologic appearance of the lungs. Nine of 10 infants did develop clinical evidence of a patent ductus arteriosus (PDA).

Since then a large number of clinical studies have been reported using surfactants of various compositions. Surfactant in one study was derived from human amniotic fluid.[15] In some clinical trials, surfactant was instilled into the lungs immediately after birth while in others it was instilled only after the diagnosis of HMD had been established. Many of these clinical trials have had promising results, but only recently have most studies included appropriate control populations.

Most clinical trials so far have shown some, if not most, of the following effects: significant improvement in oxygenation, decreased pulmonary shunting, decreased mean airway pressure required to maintain adequate oxygenation, improved lung compliance, and improved lung stability on histology as measured at autopsy. Some infants have required retreatment while a few have shown no response to the treatment for reasons that are uncertain at present.

Complications of surfactant therapy appear minimal. Some studies have noted an increased incidence and severity of PDA in treated infants. It is unclear whether surfactant therapy affects the incidence or simply the time of occurrence of a significant PDA. The

cardiovascular effects of this therapy must be analyzed in more detail. The immunogenicity of artificial surfactants also has been considered, since all preparations available contain a certain amount of protein. The only available clinical evidence from Fujiwara's group indicates no such related complications in their patients.

Pulmonary surfactant is not yet commercially available, and large-scale clinical trials need to be conducted before its routine use. Questions that must be answered include: (1) What is the optimal time of treatment, at birth or after the diagnosis of HMD is established? (2) What is the optimal dose and preparation? (3) Will treatment be uniformly beneficial regardless of length of gestation? (4) Will therapy decrease the complications often associated with HMD, including BPD, intracranial hemorrhage and retrolental fibroplasia?

High-Frequency Ventilation

High-frequency ventilation (HFV) is another nonstandard therapy presently being investigated. By definition, HFV is ventilation occurring at frequencies at least twice the physiologic rate with volumes that are near, equal to, or less than dead space volumes. Though adequate alveolar ventilation theoretically cannot occur if dead space is equal to or greater than tidal volume, experiments with HFV techniques have confirmed adequate ventilation at tidal volumes less than estimated dead space. It is thought that HFV accomplishes gas exchange by an alternative method, such as augmented diffusion of gases in large airways, increased molecular diffusion at the lung periphery, and longitudinal convection. Whatever the distribution of oscillatory flows within the lung and airways, the mechanism(s) by which these flow oscillations drive gas transport is speculative, especially in the neonate.

There are many different types of HFV techniques, including high-frequency positive pressure ventilation that delivers small volumes at frequencies two-to-six times the physiologic ventilatory rate. Newer HFV techniques include high-frequency jet ventilation and high-frequency flow interruption, high-frequency oscillatory ventilation, mixed-mode ventilation, and external vibration HFV. A detailed discussion of each of these techniques is beyond the scope of this article. They are carefully explained in a recent review by Aekerman and deLemos.[16]

In 1974, Heijman and Sjostrand[17] reported the use of HFV in the treatment of five neonates with HMD. Three infants survived without complications. Bland and colleagues[18] reported a survival rate of 92% in premature infants with HMD ventilated at rates of 60-100/minutes. In 1979, Ng and Easa[19] reported the successful treatment of pulmonary interstitial emphysema using a high-frequency, low-pressure manual ventilation technique of 140 breaths/minute. Marchak and co-workers[20] in 1981 reported the first successful short-term use of high-frequency oscillatory ventilation in the treatment of HMD. Since that report, many investigators have performed studies on animals and neonates utilizing HFV, some with excellent results.

A conference report on HFV for premature infants published in 1983[21] noted that HFV may provide adequate gas exchange in certain infants in whom conventional ventilation techniques have failed. This could include neonates with severe HMD as well as those with pulmonary interstitial emphysema. It is uncertain whether this technique produces adequate gas exchange with less barotrauma than conventional ventilation. This report also emphasized the need for controlled, randomized clinical trials to determine whether use of HFV in neonates at risk for chronic lung disease can decrease the incidence of complications such as air leak, reduce morbidity, shorten the duration of dependency on mechanical ventilation, and decrease the requirement for oxygen. These trials have not yet been conducted.

Vitamin E

Finally, I will review the use of vitamin E (tocopherol) for the prevention of retrolental fibroplasia (RLF). This therapy has received a great deal of attention in the past few years.

Use of vitamin E in RLF was first reported by Owens and Owens[22] in 1949 when they showed that it reduced retinal detachments in infants with RLF. Other controlled studies failed to confirm the usefulness of vitamin E. When the role of oxygen was identified as a causative factor in RLF, the possible relation to vitamin E was forgotten. In 1974, Johnson and co-workers[23] reported a controlled but non-random trial of vitamin E in infants less than 1500 grams. Using a sophisticated scoring system, they demonstrated that significantly less severe RLF was observed in treated infants compared to controls.

Since that report, there have been four reports of double-masked, randomized, controlled trials of vitamin E use in premature infants in an attempt to reduce the incidence and severity of RLF; results were inconsistent. The study that received the most interest is that of Hittner and colleagues,[24] which demonstrated a reduction in the severity of RLF in treated infants. Based on this study only, many neonatologists began routine use of vitamin E treatment for all premature infants less than 1500 grams, the group at highest risk, to raise vitamin E levels to about 1-3 mg/dL.

Subsequently, some studies have shown an increased risk for necrotizing enterocolitis, sepsis, and intracranial hemorrhage in vitamin E-treated infants. A recent editorial comment[25] noted the tremendous variation in serum vitamin E levels in a group of 78 premature infants less than 1500 grams receiving 100 mg/kg/day of vitamin E, with 51% of levels higher than 3.5 mg/dL. Even more disturbing, a new intravenous form of vitamin E that appeared on the market without formal FDA approval was recalled because of major hepatic, renal, and

hematopoietic toxicity and death in 38 infants who received the drug as treatment to prevent RLF.[26]

The most recent and largest randomized, double-blind controlled study,[27] involving 287 infants less than 1500 grams or less than 33 weeks treated with vitamin E, revealed no difference in the incidence of RLF of any stage. In fact, retinal hemorrhages occurred more frequently in the vitamin E-treated group, as did intraventricular hemorrhage.

In conclusion, there is presently no convincing evidence that vitamin E can prevent RLF. This is especially pertinent for the less than 1000 gram infant in whom the incidence of serious side effects appears to be greater than the possible benefit demonstrated by any study to date.

Summary

This review has emphasized the need for controlled clinical trials for all new forms of therapy in neonatology because of the tremendous short- and long-term risks involved in treating these tiny patients. New therapies should be validated with an adequate number of controlled trials before instituting them in the routine clinical setting. This should ensure that only those therapies in which benefits exceed risks are implemented.

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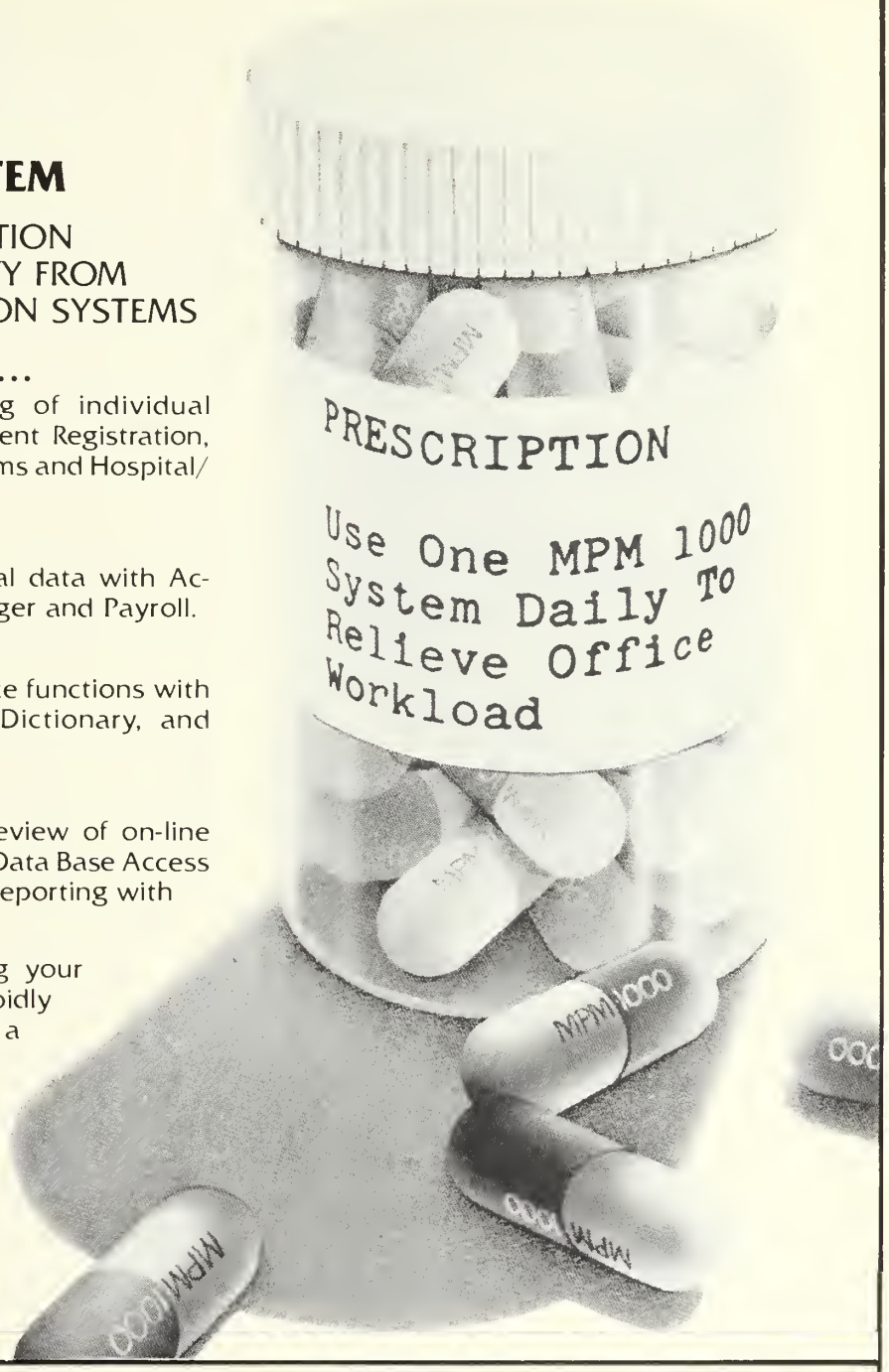
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The Duchenne Muscular Dystrophy Spectrum as Clarified by the 'Outlier'

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W.H.S. THOMSON, M.D.[2]

Abstract

This paper presents five case histories of late-onset Duchenne muscular dystrophy to which the appellation "outlier" has been applied. The study was done to clarify the "outlier's" relationship to the total disease spectrum (Is he part of it? - He is); and to determine the clinical attributes which would permit early recognition and diagnosis.

We found that muscle weakness becomes detectable between the sixth and eighth years, and loss of walking ability occurs between seven and fifteen years. Muscle cramping is a frequent early symptom. Neither calf enlargement nor Gowers' sign are present by the fifth year.

The most sensitive indicators of disease and monitors of disease progression are the features and functions relating to progressive loss of skeletal muscle elasticity. The "outlier" can be recognized at least by the fifth year, and the total spectrum can be stratified by that age.

Currently-advocated diagnostic criteria for DMD therapeutic trials require that muscle weakness be demonstrated before the fifth year. The "outlier" can be diagnosed by that age but not in terms of muscle weakness. Thus, the valuable research potential of this rare patient is neither being recognized nor utilized at the present time.

THE TERM "OUTLIER" has been used to designate those Duchenne muscular dystrophy (DMD) patients whose course of progression is considerably slower than that of the average patient.[1] "Outliers" have a delayed onset of clinical manifestations, and they are ambulatory beyond the tenth year. These late-onset DMD patients of slow progression are, of course, to be distinguished from patients with early-onset Becker muscular dystrophy (BMD).

The proponents of the term "outlier" for the late-onset DMD patient ask two pertinent questions:

1. "Do these patients represent a genetically different disorder or (are they) simply one end of the spectrum of severity of the disease?"

2. "Can such patients be identified at an early age?"[1]

The present paper presents answers based on clinical observations of muscular dystrophy over a period of 30 years from which has been derived the natural history of the disease and its pathodynamics as suggested by clinical and laboratory observation.[2,3,4]

With regard to question No. 1, our experience has been that the initial detection of muscle weakness may be made at any age from 3 to 8 years, which compares to the experience of Crisp, Ziter, and Bray[5] (2 to 8 years), and Shaw and Dreifuss[6] (up to 8 years); and the age at which the ability to walk is lost may occur at any age from 7 to 15 years (7 to 14 years—Gardner-Medwin[7]; 6 to 12 years—Emery and Skinner;[8] and 6 to 16 years—Shaw and Dreifuss[6]). These findings agree with those of Ringell, *et al*[9] and Rotthauwe, *et al.*[10]

Zellweger[11] notes that most DMD patients "with few exceptions are chair bound by the age of 12 years" and that the few who are still ambulatory by 15 years contrast remarkably in severity of disability to the BMD patient of the same age. Loss of the ability to walk prior to 16 years has been reported in BMD but this is exceptional.[12,13,14] These data clearly define two distinctive, rate-determining parameters of the clinical spectrum (*Figure 1*). In viewing the disease from this perspective, there is no need to invoke a special genetic hypothesis to account for the "outlier." He is not a separate entity. He is clearly "one end of the spectrum of severity of the illness." The term "outlier" is a misnomer in the sense that there is no actual separation of this group of DMD patients from the main body. There is rather a continuous, unbroken series ranging from the most rapid progression to the slowest.

This spectrum is broad, however, and it is well to keep in mind that at one extreme a boy may lose the ability to walk during his seventh year,

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whereas at the other, the 7-year-old "outlier" may be showing only the earliest manifestations of muscle weakness. At either extreme, the percentage of cases is very small. At the "outlier" end of the spectrum, most patients who are ambulatory beyond the tenth year will cease to walk during the eleventh year, and increasingly fewer in the twelfth, thirteenth, fourteenth, and even fifteenth years. It is rare to find a patient still ambulatory in his fifteenth year. (We average one or two per decade in a clinic of 75-85 DMD patients.)

In DMD families, it is not at all unusual to find affected brothers or male maternal relatives afflicted to a different degree of severity. "Outliers" may therefore have such relatives whose progression follows the more usual course. Thus, in our clinic there occurred DMD twins, one of whom was ambulatory beyond his twelfth year, whereas the other had lost the ability to walk by his ninth year—one clearly being an "outlier" and the other not. The distribution of muscle weakness is essentially the same at all points in this spectrum so that in the "outlier," the clinical picture simply evolves more slowly with the later appearance of the classical muscular manifestations.

The great majority of boys with DMD lose the ability to walk during their eighth, ninth, or tenth years. In our clinic, the number of patients ambulatory beyond the tenth year amounts to approximately 10%. Thus, "outliers" are clearly a minority of the DMD population.

With reference to the second question of identifying the "outlier" at an early age, the initial manifestations can be detected clinically during the first five years of life but not in terms of muscle weakness, Gowers' sign, or calf hypertrophy. "Outliers" are frequently missed, because even by their fifth year, the clinical signs may be too slight to arouse suspicion of the disease. Unless a family history of dystrophy exists to alert the physician to the need for appropriate diagnostic

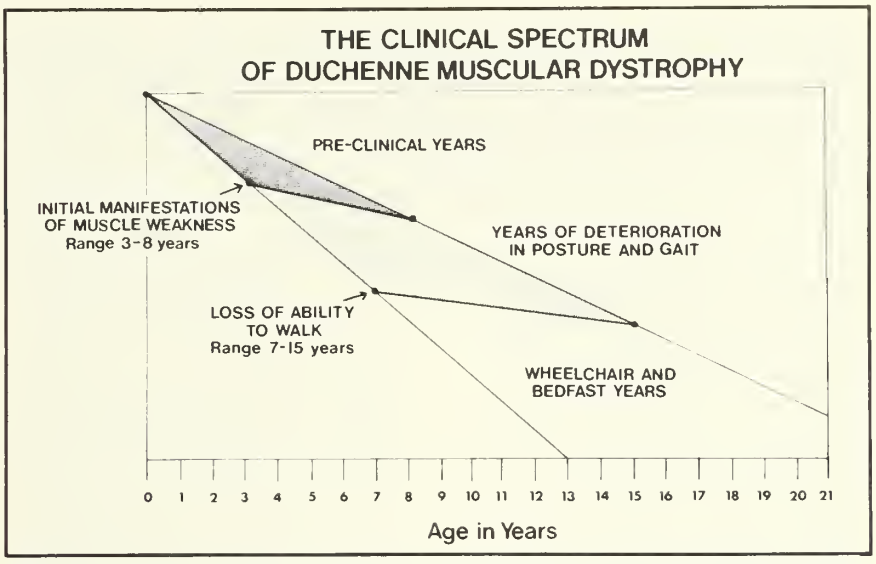


FIGURE 1: The total disease spectrum of Duchenne muscular dystrophy consists of a continuous, unbroken series from the most rapid to the slowest progression. The "outlier" is the slow end of the spectrum.

laboratory studies, such as serum creatine kinase or other enzyme elevations, or unless some additional medical problem develops whose study discloses coincidentally that such diagnostic enzyme elevations are present, the existence of muscular dystrophy may not be suspected for some years to come.

It is extremely important to recognize these patients, however, and to be able to do so as early in life as possible, because in therapeutic trials "outliers" are those in whom a salutary response to effective intervention would be the most readily detected. Because of their slow progression, however, "outliers" might thus be excluded from a therapeutic program simply because they may fail to meet a declared major diagnostic criterion (i.e., "the patient must have the onset of weakness before the age of 5 years"[15]).

If the "outliers" are at one end of a continuous spectrum, and if by age 5 years muscle weakness is not diagnostically evident, then what clinical clues might then be present to alert the physician to the possibility of a latent DMD in what appears to be a normal boy? The answer is to be found in the postural and functional features which are dependent upon the skeletal muscles' physical property of elasticity.

This elastic property is present in the skeletal muscle of the DMD infant but diminishes as the disease progresses.[2,3,4] The integrity of this property is essential for normal muscle-spindle activity, since with loss of elasticity, the muscle stretch reflex (postural reflex) diminishes and ultimately disappears. Elasticity also is essential for development of the ability to jump with both feet, to balance on one foot alone, and to hop on one foot. Loss of elasticity is responsible for what Meyron referred to as an "incapacity of springing"[16]—the sensation that the dystrophic patient will slide through the examiner's grasp when lifted under the axillae. With loss of elasticity, surface contours and posture change. In early diagnosis, it is important to note that skeletal muscle elasticity is essential in forming the longitudinal plantar arch and that the surface contour of the foot expresses changes in this property in the peroneus longus muscle.[2]

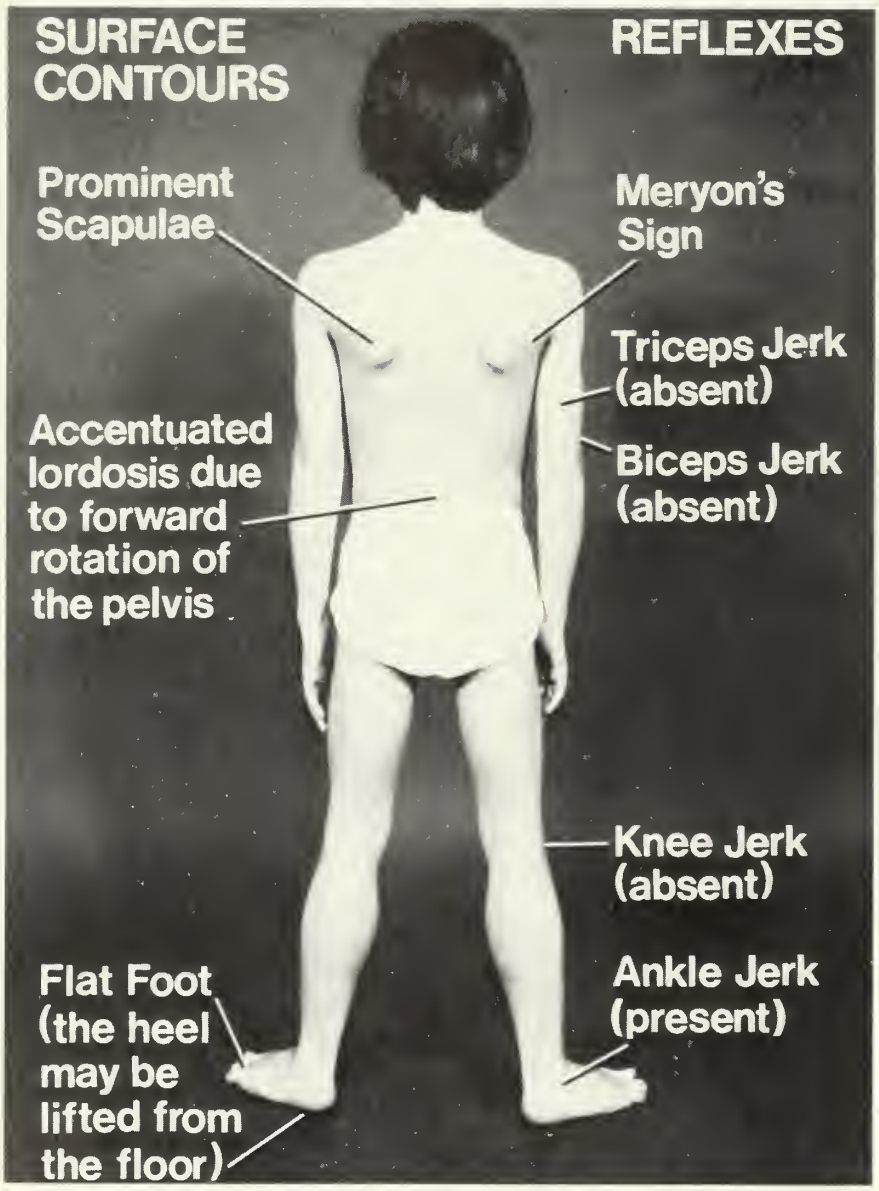


FIGURE 2: Many diagnostic features of Duchenne muscular dystrophy relate to the progressive loss of skeletal muscle elasticity. Shown here are the surface contours and reflex changes that are ordinarily present by the fifth year.

This paper presents the case histories of five typical late-onset ("outlier") DMD patients which demonstrate that muscle weakness is not a dependable early diagnostic feature, but that there are elasticity-related and other clues which may be present by the fifth year that can alert the physician to the need for definitive enzyme and tissue studies. In addition, the differential diagnosis from the very early-onset BMD is considered.

In order to compare these five late-onset examples with the average course of DMD, a brief summary of the more salient aspects of this clinical course may be useful (*Figure 2*).

The earliest objective clinical sign is flat feet in the weight-bearing position, this being evident as soon as the child can walk.[2] By the third or fourth year, weakness in the pelvic girdle muscles will be evident in the child's need to use a banister in climbing stairs. By the fifth year, usually before, the cardinal features of the disease, calf enlargement and Gowers' sign (using the hands to climb the legs when arising) will be present. Forward rotation of the pelvis, which accentuates the lumbar curve, will be noted and the surface contours of the lower scapula will be prominent (*Figure 3A*). Upon lifting the patient by grasping his thorax, reflex contraction of the chest muscles will not occur and he will tend to slide through the examiner's grasp. Muscle stretch reflexes will be absent in the upper extremities at the biceps and triceps. The reflexes at the knees may or may not be present but the ankle reflexes will. The patient will not be able to jump, to balance on one foot alone, or to hop. Patients answering to this description at the fifth year will have easily demonstrated muscle weakness and, in their clinical progression, will lose the ability to walk sometime during their eighth or early ninth year.

The five "outlier" examples presented here demonstrate such a contrasting experience that it is necessary to consider also the clinical manifestations of the early-onset BMD (i.e., BMD manifesting before the fifth year.)

Although such patients seldom occur, we have had the opportunity to follow five examples in our clinic. In four of these, the diagnosis was facilitated by a family history of BMD. The fifth patient, a mutant now 18 years old, still ambulatory but with waddling gait, appears likely to be still walking until well into his twenties. These patients all had significantly elevated CK values and diagnostic muscle biopsies prior to the fifth year. All five were flat-footed in the weight-bearing position. None had tight heel cords at this stage to limit calf mobil-

ity. A full range of movement at the ankle was present.

The unique clinical feature common to all five at the time of diagnosis (2-4 years of age) was a propensity for toe walking. All could walk in a heel-down mode when requested to do so but their natural tendency was to walk on the toes. They did not walk as quickly in the heel-down mode. Emery and Skinner[8] have called attention to this phenomenon in BMD ("when onset was in childhood") and it has also been reported incidentally by Filippi (Case 1.M.T.)[17] and Ringell, *et al* (Case 4).[9] Except for these observations limited to the appearance and function of the feet, no other clinical sign of abnormality could be found in these five patients at this early age (*Figure 3C*).

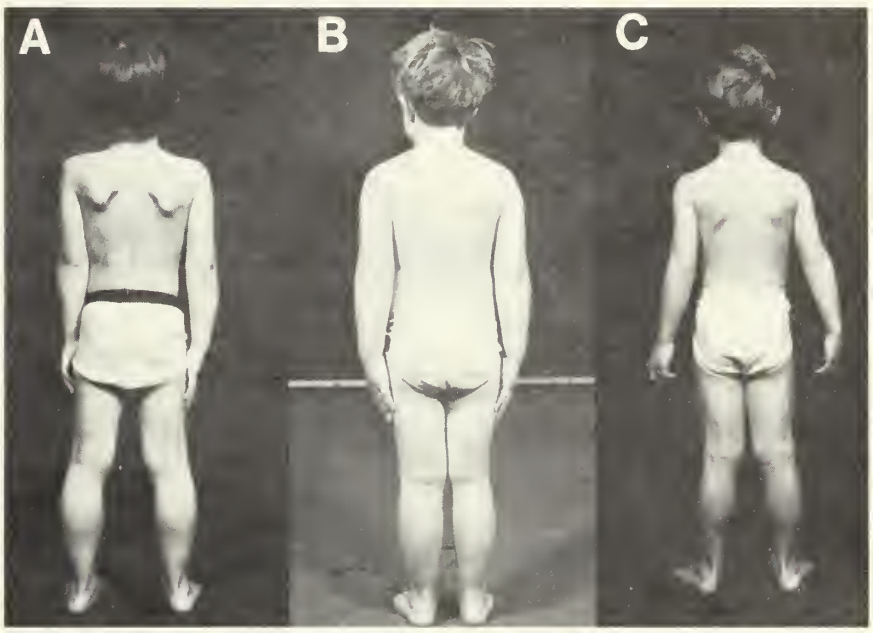


FIGURE 3: Rear view of three 5-year-old patients with muscular dystrophy showing surface contours.
A. Typical Duchenne muscular dystrophy.
B. Late-onset Duchenne muscular dystrophy ("outlier").
C. Early-onset Becker muscular dystrophy.

DMD 'Outlier' Case Presentations

Patient Number 1 is an example of very early diagnosis of DMD, without family history, made through the coincidental detection of enzyme abnormalities during an intercurrent illness. DMD was diagnosed at the age of 2½ years. The prognosis that the patient is an "outlier" is supported by the clinical picture presented at the fifth year (*Figure 3B*):

Birth was full term and uneventful, and development proceeded normally. At eight months, the patient developed an inner ear infection which did not respond completely to treatment. One month later he was admitted to the hospital as an emergency because of bilateral otitis media and focal, left-sided seizures. The ear problem responded to appropriate antibiotic therapy, and phenobarbital was given to control the seizures. The patient came under the care of a neurological group at this time. His in-patient study included CT scan for the head, which was normal, and an EEG which disclosed right temporal spiking. Following discharge, the patient was examined at periodic intervals by the neurological team.

Phenobarbital caused hyperactivity so the drug was soon discontinued in favor of Dilantin. In doing periodic blood studies to monitor the anticonvulsant medication, elevated values were noted for the transaminases (SGOT, SGPT) and for lactic dehydrogenase (LDH). Serum bilirubin was normal. Other drugs were then substituted for Dilantin, but the abnormal enzyme values became progressively more elevated as time passed. SGOT and SGPT increased to approximately three times the upper limit of normal, and LDH to two times normal. Serum creatinine at this time was 0.4 mg/ml (normal for this age[18,19]). No further seizures occurred.

Patient Number 1 was readmitted to the hospital for additional studies at the age of 2½ years. Creatine kinase (CK) was assayed for the first time, and the value was 25 times normal. An EMG and nerve conduction study of the lower extremities was found to be normal. The neurologist managing the patient's care recorded these clinical comments: "all reflexes present"; "no muscle hypertrophy"; "no muscle weakness"; and "no Gowers' sign." The discharge diagnosis was: "Abnormal liver function tests, possibly secondary to muscle disease, but no evidence of muscle disease clinically (sic)."

The patient was then referred to a pediatric neurologist at Indiana University Medical Center (IUMC) whose clinical evaluation revealed no sign of muscle or neurological abnormality and whose clinical impression was: "Unexplained elevation of serum enzymes." A muscle biopsy was then done, the report ending with the impression: "Muscular dystrophy consistent with Duchenne's."

The patient is now 5½ years old. He jumps and hops repetitively and balances well on one foot alone for an indefinite period of time. Muscle stretch reflexes are present throughout the upper and lower extremities. His calves are not unusual nor are his

scapulae prominent. Except for flat feet in the weight-bearing position, he shows no gross sign of clinical abnormality. Gowers' sign is negative. He can be lifted to the examining table without the sensation that he will slide through the examiner's grasp. There is no demonstration of muscle weakness. Had the diagnosis not been established by biopsy and enzyme elevations, it is doubtful that the disease would yet have been recognized. His gait is normal. Even when running, he has no tendency to shift his weight forward onto the balls of his feet as noted with BMD at this age. Although he appears somewhat awkward when running, he does not fall. The only unusual symptom elicited at this time is a complaint of calf myalgia associated with prolonged physical exertion. The parents use the term "cramping" to describe this phenomenon which is not associated with muscle spasms insofar as they are aware, nor are cramps relieved by weight bearing, but only by rest. CK values at this time are about 50 times the normal value.

Patient Number 2 is an instance of early diagnosis in a patient whose family history disclosed a number of other instances of DMD, none of whom was an "outlier." The diagnosis was established in Patient Number 2 at the age of 2 years on the basis of markedly elevated serum CK values and muscle biopsy. The only clinical abnormality at 2 years was flat feet, and this phenomenon is still present at age 7 years (*Figure 4*).

Patient Number 2 developed normally in accordance with the Denver developmental scale. During his fifth year, he seemed to be an essentially normal boy. He walked normally, could run without falling, jump and hop repetitively, and balance for a prolonged period of time on either foot alone. Gowers' sign was absent. All muscle stretch reflexes could be elicited from the upper and lower extremities. Muscle weakness could not be demonstrated. Pseudohypertrophy of the calf muscles was not present. However, serum CK values had increased with each passing year to the present 100 times normal.



FIGURE 4: Patient Number 2 at the age of 7 years. Although the feet are still flat, Helbing's sign is disappearing. The inferior angles of the scapulae are becoming prominent and the calves are showing early enlargement.

Now at age 7, the calves and scapulae are beginning to show prominence (*Figure 4*). All muscle stretch reflexes are present. Gowers' sign is present only to the extent that one hand is placed on the thigh in arising, which is done quite rapidly. The patient can arise without using his hand at all but not as quickly. In running, he appears awkward and is not able to keep abreast of his contemporaries. He uses one hand on the banister when climbing steps but can climb without doing so. Cramping of calf muscles is noted on prolonged physical activity.

Patient Number 3 is an "outlier" whose exercise-related cramps were attracting attention as early as his fourth year. The diagnosis was not made until his seventh year. The family history is unknown.

Patient Number 3 was adopted at the age of three weeks. Motor development was not unusual. He learned to walk, to run, to jump, and to hop at the appropriate age and in the normal manner. The initial muscle symptom was "cramping" which was evident before his fifth birthday. This was first noted by the foster father who observed one day that in racing with a local girl of the same age, the boy consistently lost. The foster father then coached the youngster in the techniques of running and, in so doing, had the boy run again, and again, and again. This session soon ended when the youngster complained that his calves were hurting badly and that he could no longer run.

By his fifth year, the patient had become a very good swimmer. The pool activity he particularly enjoyed was sliding down a long chute into the water, which first required that he climb a series of steps to a height of about 30 feet. The parents noted that after doing this twice, he quit, and on inquiring why he no longer used the slide, he said that climbing the stairs made his legs hurt.

Later, during his fifth year, he was

admitted to the hospital for a tonsillectomy. Sudden cardiac arrest occurred on initiation of anesthetic. Resuscitation was prompt and no permanent damage was evident. This event did not prompt a CK study. However, a neurological consultation was obtained and the opinion given that no neurological deficit was present. The patient returned home and appeared to his foster parents to be no different in terms of physical vigor and activity than before his hospital admission.

Attention was first directed to the problem of possible muscle weakness and/or incoordination during his seventh year by his school teacher who observed that the patient was unable to keep abreast of his contemporaries in the physical education class. Her observations led ultimately to an evaluation by a pediatric neurologist at IUMC who recorded the following observations: "All MSRs (muscle stretch reflexes) present except the biceps"; "calves are hard and firm"; "minimal hip weakness"; and "minimal Gowers' sign." The CK value was elevated 121 times above normal. A diagnosis of muscular dystrophy was made with this comment (which reflects the infrequency of seeing the DMD "outlier"): "Duchenne doubted, Becker is possible."

A biopsy was obtained from the right quadriceps muscle. The pathological diagnosis was: "Muscular dystrophy, consistent with Duchenne."

The patient was 8 years of age when first evaluated in the muscular dystrophy clinic. He was able to jump and to hop repetitively and to balance on either foot alone for over a minute. His upper extremity reflexes were absent, calves were minimally enlarged, and feet were flat. By his ninth year, only the ankle reflexes remained. Moderate difficulty was experienced in arising from the floor. He could jump and hop one time only. Balance on one foot alone was precarious. He walked on the balls of his feet. Heel cords were tight. The feet were no longer flat (*Figure 5*).



FIGURE 5: Patient Number 3 at age 9 years. Prolonged toe gait has resulted in contractures of the Achilles' and peroneus longus tendons. The flat foot and Helbing's sign have disappeared.

During his tenth year, he lost all ability to hop, jump, or balance on one foot. He became unable to arise unassisted from a straight back chair or from the floor. During his eleventh year, walking became increasingly difficult, and a few weeks before his twelfth birthday, he lost the ability to walk altogether.

Patient Number 4 is an example of late-onset muscle weakness and late diagnosis in a patient who had two maternal uncles and a cousin with DMD. Patient Number 4's mother was familiar with the disease from these individuals, all of whom had lost the ability to walk by or before their ninth year. She did not suspect the disease in her own son who appeared healthy and vigorous at his fifth year, an age at which her brothers had long since been experiencing difficulty with walking and climbing stairs and whose calves had shown unusual enlargement.

Patient Number 4 had a normal birth and normal early development. He walked at 10 months and could jump and hop repetitively at age 4. It was not until his seventh year of life that the parents first suspected that the patient might have a physical disability because he was noted to be slow in climbing stairs. The family doctor was not certain if dystrophy was present but referred the patient to the pediatric diagnostic clinic at IUMC. The following comments from that examination include: "cannot run quickly"; "awkward"; "muscle stretch reflexes two plus in both uppers and lowers"; "walks well, erect posture"; "can walk on toes and heels"; and "slight weakness in pelvic muscle."

The muscle biopsy was reported as consistent with pseudo-hypertrophic muscular dystrophy. CK values ranged from 22 to 46 times normal.

The patient was then referred to the IUMC MD clinic at age 8 years. Because of his ability to hop and jump and because of his very minimal findings, the possibility of Becker dystrophy was entertained despite the family's history of Duchenne dystrophy.

Deterioration in posture and gait became evident during the subsequent

years. By age 12, the gait was broad based, very slow, and waddling. The ability to ambulate was lost just after his fifteenth birthday. The patient is now 21.

Patient Number 5 is an unusual example of DMD where the patient had symptoms before his fifth year without diagnosis being made until much later. No family history of the disease is present.

There is nothing unusual in Patient Number 5's history until his fourth year. He walked at 12 months and developed the ability to jump and hop and was able to keep abreast of his contemporaries. There was no unusual illness. The parents' first indication that something was amiss developed during the fourth year when he began to complain of calf discomfort. (The patient, who is now 18, uses the term "cramping" to identify this sensation, but he states that the feeling is not that commonly known as a "charlie horse" but rather that it is more of an aching sensation like that associated with extreme muscle exertion.) The parents sought medical help for this during the youngster's fourth year, but the examinations carried out periodically over the next few years failed to excite the concern of the examining physicians. Muscle weakness or other abnormality was not detected. The patient was referred ultimately to the pediatric diagnostic clinic at IUMC at the age of 6 years where diagnosis was made on the clinical basis of a weakly positive Gowers' sign and muscle biopsy. Stretch reflexes were well preserved.

By the eighth year, the calf muscles were enlarged. The upper extremity reflexes were gone, the patient's ability to jump and hop were lost, and his posture was becoming lordotic. The CK value at this time was 33 times normal.

Deterioration of the patient's posture and gait continued. He lost the ability to walk late in his eleventh year. He continued to be able to extend his arms overhead until past his fifteenth birthday, and scoliosis did not commence until he passed his eighteenth birthday.

Patients 3, 4, and 5 became chair bound by the age accepted for DMD, Patient 4 being 15 years of age when this occurred. Patients 2 and 4 had a family history of DMD. Patients 3 and 5, for whom there is no family history, lost walking ability before their twelfth birthday, thus well within the usual range for DMD. Only with Patient 1, for whom there is no family history of DMD and as yet no feature associated with muscle weakness, is the diagnosis not clearly established on clinical signs alone. That a dystrophic process is present is clearly demonstrated by muscle biopsy and serum CK values. From the clinical perspective, however, he shows only flat feet. He differs clinically from BMD at this age only in his normal mode of walking.

Discussion

In none of the five patients described here was muscle weakness detected by the fifth year. All five were flatfooted, and four of the five experienced exercise-related calf myalgia before the fifth year. None had a toe gait by age 5. A family history of DMD was known for two. None demonstrated calf pseudo-hypertrophy or Gowers' sign by their fifth year. These features developed at age 7 years or later in Patients 2, 3, 4, and 5.

Although muscle weakness was not detectable by the fifth year, sufficient clues were present in terms of family history, calf myalgia, and/or elasticity-related phenomena in all five patients at least to consider each a DMD suspect.

All patients in this series developed the ability to jump repetitively, to balance for an indefinite period of time on either foot alone, and to hop repetitively on one foot. All retained muscle stretch reflexes in both upper and lower extremities through the fifth year or beyond. All for whom a photographic record is retained had normal surface contours of the scapulae and lower back at the fifth year. These are clinical features that clearly distinguish the 5-year-old "outlier" from the usual 5-year-old DMD patient. The significance of this is that stratification and prognosis is possible at age 5 for all DMD patients, and this distinction can be made primarily on those clinical features that are dependent upon the physical property of elasticity of the skeletal muscles.

The most useful piece of information facilitating an early DMD diagnosis is a family history of the disease. This includes almost two-thirds of all cases so that detection is easily possible during the first year of life simply by performing the serum CK determination, preferably after the age of 6 months.

Where a family history is not obtained, the disease can be suspected solely on the basis of flat feet. All DMD patients aged 5 or less are flatfooted when bearing weight (not necessarily so when not weight bearing).[2] This means that any flatfooted boy up to the age of 5 years is a DMD suspect. The CK test clearly distinguishes the normal flatfooted boy (of whom there are very many) from the relatively few who will have the disease. CK screening of the flatfooted 2- to 5-year-old population would be an efficient means for early detection of all DMD patients.

The physician does not ordinarily associate flat feet with fatal illness but that is exactly its implication for this disease. The flat foot is characterized by rotation of the os calcis into a valgus position causing the Achilles' tendon to assume a medial curve (Helbing's sign). The prominence of this sign is variable. Examination for Helbing's sign is a useful screening procedure for DMD, providing a rapid clinical method for detecting DMD suspects who may be showing no other signs of the disease (*Figure 6*).

A second elasticity-related alteration to surface contour relates to the scapulae. Unless concealed by overlying adipose tissue, the observer can normally discern the entire medial border. In DMD, the inferior angles

become prominent. This is commonly referred to as "winging" and is due primarily to loss of elasticity of the lower portion of the serratus anterior muscles. It is distinctly different from the winging phenomenon noted with palsy of the long thoracic nerve. Pushing the hand of the outstretched arm against the wall exaggerates the winging when nerve palsy is the cause, whereas this maneuver causes the winging to diminish or disappear in DMD. Winging is a prominent feature in the typical 5-year-old DMD. It may or may not be faintly detectable in the 5-year-old "outlier." The sign will not be detected in the 5-year-old BMD (*Figures 3A, 3B, 3C*).

Loss of elasticity accounts for the most obvious DMD change in surface contour and posture—the exaggerated lower lumbar curve which develops with forward rotation of the pelvis. It is present in the typical DMD at age 5 but not at this age in the "outlier." With loss of elasticity in this region, there is simultaneous loss of postural reflexes in the abdominal and pelvic muscles.

Muscle Stretch Reflexes. The normal resting skeletal muscle is physically in a state of stretch, and this stretch is essential for normal function of the muscle spindle. DMD is characterized by progressive loss of skeletal muscle elasticity, and as this occurs, the spindle becomes less responsive and ultimately its function fails completely.[2] The muscle stretch reflexes therefore provide objective measurements of the rate of disease progression. The earliest reflexes to disappear are those at the biceps and triceps.[20] These have already disappeared in the typical 5-year-old DMD. The knee reflexes also have usually disappeared by this age. The upper extremity reflexes and knee reflexes will be present in the 5-year-old "outlier" and early-onset BMD. Ankle reflexes will be present in all three types at age 5 years.

Muscle strength diminishes with loss of muscle elasticity but may be difficult to assess in the 5-year-old patient. Careful evaluation of the stretch reflexes provides better information.

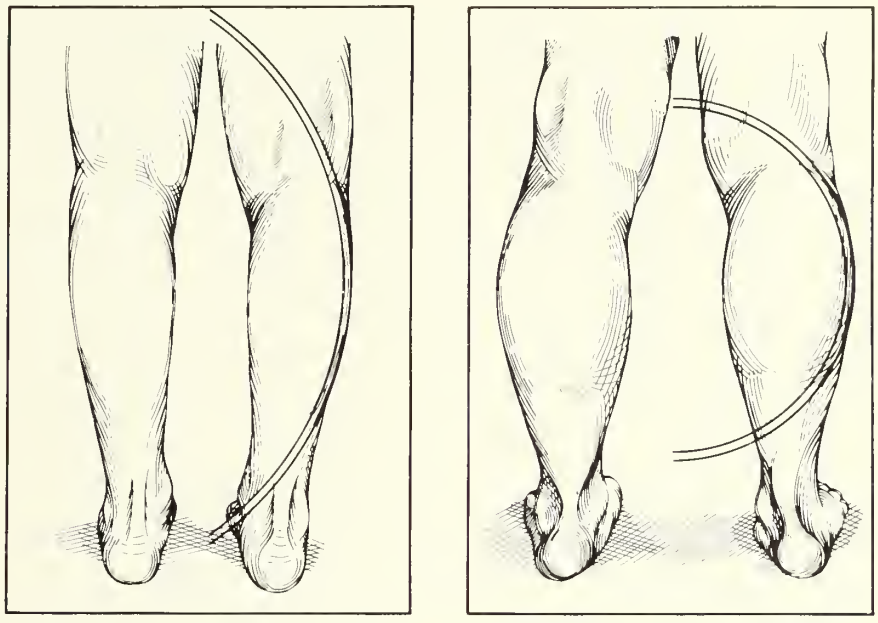


FIGURE 6: Helbing's sign and calf enlargement. Flat feet in the weight-bearing position is an early diagnostic sign in the full spectrum of DMD. Helbing's sign is the curve of the Achilles' tendon associated with the rotation of the os calcis. The curvature of the inner calf provides the best clue to the presence of pseudohypertrophy. The radius shortens with disease progression.

The diagnostic phenomenon of the patient tending to slip through the examiner's grasp upon being lifted to the examining table is due to this loss of elasticity. This particular phenomenon can be detected in the typical 5-year-old DMD but not in the 5-year-old "outlier" or BMD.

Motor Development. The great majority of patients with DMD never develop the ability to hop, to jump, or to balance on one foot alone. If none of these abilities is present in the 5-year-old DMD, he will be unable to walk after the age of 8 years. No further evidence need be sought. Those individuals who can jump one or two times or can hop one time only (their feet clearing the floor completely with these maneuvers) have a somewhat better prognosis, but they will not be walking beyond their tenth year. The DMD patient who will remain ambulatory into his thirteenth to fifteenth year will be able to hop quickly across the floor on one foot at the age of 5 years. Such a patient is uncommon.

The Denver developmental scale cannot be used as a guide to prognosis since rate of motor development alone does not necessarily reflect the rate of disease progression. We have for example, a DMD patient who remained ambulatory into his fifteenth year, who was very slow in his early motor development, being 22 months when he walked alone. On the other hand, as pointed out by Gardner-Medwin,[7] a history of tardy motor development like the flat foot is a warning signal that DMD may be present and warrants a CK test. This is especially true for the 3- to 5-year-old boys who are unable to jump, to balance on one foot alone, and to hop.

Other Features. The two principal features of DMD, pseudohypertrophy and Gowers' sign, do occur in the "outlier" but not by the fifth year. As with the other signs of this disease, these manifestations occur later. In the series of patients presented here, calf enlargement was recorded initially between the seventh and ninth years, and the earliest detection of Gowers' sign was six years.

Forming an impression whether calf muscles are enlarged is not always easy and physicians do not always agree, particularly if the patient is of endomorphic or mesomorphic habitus. One way to form a judgment is to view the calves from the rear, observing the medial and lateral contours. These contours appear as circular segments, the lateral curve being dominant and in the normal boy having a radius approximately the distance from the base of the heel to the popliteal crease. The medial curve has a slightly shorter radius. In DMD, the radius of these curves shortens as the calf enlarges, becoming considerably less than the heel-popliteal distance (*Figure 6*).

Gowers' sign appears in association with loss of elasticity and strength in the muscles that attach to the pelvis, which thus permits the pelvis to assume a forward rotation, accentuating lumbar lordosis and effecting a posterior shift of the body's center of gravity.[2] In the typical DMD, this is compensated by a forward shift of weight by walking on the balls of the feet. This phenomenon develops very gradually, usually between the fifth and seventh years. Compensatory shortening of the Achilles' and peroneus longus tendons follows, the traction of the latter causing an elevation of the plantar fascia and hence the flat foot disappears.[2]

The "outlier" who will lose the ability to walk at the age of 11 or 12 seems to follow this same pattern, only more slowly (*Figure 5*). The "outlier" who will continue walking to ages 13 through 15 follows a slightly different pattern. In this category, the heel-down gait tends to be maintained, balance being achieved primarily through posterior tilting of the rib cage, which has the effect of keeping the head poised over the center of gravity (*Figure 7*).

The toe gait noted in early-onset BMD is a unique feature that distinguishes early-onset BMD from late-onset DMD. In the former, this phenomenon is fully developed from the time of its appearance and has been recorded as early as the first year.[21] Thus, in our five cases, it was detected during the initial evaluations, the patients ranging from 2 to 4 years of age. It is not associated with muscular weakness and waddling gait as in DMD. In DMD, the altered foot stance develops very gradually, concurrent with forward rotation of the pelvis, so that in its initial manifestation, the space under the heel is sufficient only to admit a slip of paper.[2] Months are required for the full toe stance posture to develop. In both diseases, however, this altered foot stance appears to be a compensating mechanism to facilitate balance. In early-onset BMD, the phenomenon is dynamic, not static, being demonstrated only when the boy is moving, not when he is standing still. It is more likely to appear when the youngster is moving quickly, suggesting that toe stance has the effect of improving the muscle spindle sensitivity and efficiency. In DMD, on the other hand, toe stance is seen both in the static standing position and in ambulation. Further, the Achilles' and other tendons shorten early in DMD, thus limiting ankle mobility. This is not seen during the first five years in early-onset BMD.

Another feature of DMD that has elicited very little comment is the phenomenon of calf myalgia, for which the term "cramping" is most often used. Gardner-Medwin[7] calls attention to it as a symptom of dystrophy, being more common in his experience with BMD. Others have mentioned it in their case reports of BMD.[22,23] In DMD, Swaiman and Wright[24] comment that "intermittent calf pain may occur during the early stages." Thomson[25] also calls attention to it in DMD and suggests its cause to be ATP depletion. Another possible explanation is suggested by Ferguson[26] who notes that



FIGURE 7: Late-onset Duchenne muscular dystrophy at age 14. Balance is maintained primarily through posterior tilting of the thorax. The patient shifts his weight forward to the balls of his feet but to a less prominent degree than the more typical DMD patient.

children with flat feet frequently have associated calf pain. Most authors, however, make no mention of calf discomfort or cramping in DMD, and Rowland[27] specifically states that cramping does not occur.

Our experience has been that families seldom volunteer information on calf discomfort. Usually, the physician must inquire about it specifically. Overall, however, this was the initial complaint of three DMD patients, all of whom subsequently proved to be "outliers."

Since the "outlier" is demonstrated as one end of the clinical spectrum of the disease and since muscle weakness may not be evident in such cases by the fifth year, it seems that the essential diagnostic criteria proposed by Brooke, *et al*[15] require modification to include the "outlier," either in terms of demonstrable muscle weakness by age 8 years, or if 5 years is retained as the limiting age, in terms of the features which are in fact detectable by that age. The "outlier's" research potential is most valuable of the total spectrum.

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Patient Assaults on Residents

VICTOR MILSTEIN, Ph.D.
Indianapolis

Abstract

Psychiatry and medicine residents were surveyed concerning whether they had ever been assaulted. Eighty-five percent of the psychiatry and 60% of the medicine residents responded. Two and one-half times as many psychiatry residents were assaulted as medicine residents. Circumstances surrounding the assault and characteristics of the patient assaulters were different for the two groups of physicians. Implications for training are discussed.

THE PROBLEM OF violence in general and in mental hospitals particularly has received increasing attention. Studies have considered the context in which violence occurs,[1-3] and the association between the assaulter and the one struck.[4] A number of reports have examined characteristics of violent, assaultive patients,[5-8] and the frequency of occurrence of assaults.[9-12] The present study is a survey of residents and fellows with regard to whether they had ever been assaulted.

Methods

A simple questionnaire was used which provided a dictionary definition of assault as "an attack with violence by physical means; an attempt to do bodily violence or injury." The residents were asked their age, sex, height, weight and postgraduate year. If they had never been assaulted during their residency, the form was to be returned after completing these items. Space was provided for comment. They were asked if there had been more than one assault and to provide details of the most recent incidents. Specific information requested related to the place where the assault occurred, the presence of other people, whether an object was used, the patient's age, sex and diagnosis, whether they had known the patient, whether they believed they had contributed to or triggered the assault, and whether they could draw any personal or general lesson from the incident.

All 33 psychiatric residents and fellows and all 117 medicine interns, residents and fellows at the Indiana University School of Medicine were surveyed. Each questionnaire was individually addressed and included an addressed, return envelope. Approximately two weeks later, a second mailing was made to those who had not responded, encouraging a reply.

Results

Twenty-eight or 85% of the psychiatry residents completed the questionnaire while 70 or 60% of the medicine residents responded. Of the latter, those who returned the questionnaire were similar to the entire group of fellows/residents/interns in terms of sex but slightly less so for postgraduate year. Approximately 50% of first, second and third year medicine residents returned questionnaires while 80% of those beyond this level responded. However, there was a trend for fewer returns with greater experience for the psychiatry residents.

Although medicine residents are assaulted much less frequently than psychiatry residents, 16% versus 39%, in both groups there was a trend for a greater proportion of assaults to be reported during later postgraduate years. For the first through fourth and more postgraduate years, the percent of psychiatric residents assaulted was 12, 50, 67 and 43, respectively. For medicine residents, the comparable percentages were 11, 7, 15 and 24. A larger proportion of female than male residents reported assaults: 45% females and 35% males for psychiatry residents and 23% to 14% for the medicine residents.

The mean age of assaulted residents is higher than their not assaulted colleagues. However, this is probably related to the fact that more of the not assaulted residents were in the first and second postgraduate years. With respect to size, neither height, weight nor estimated body surface area differentiated assaulted from not assaulted residents.

The Assault

Six of the medicine and four of the psychiatry residents stated that they had been assaulted more than once, one of the medicine residents "5-10 times." Half of the psychiatry residents reporting more than one assault were female. There was no relation between sex of the medicine residents and assault but there was a tendency for multiple assaults to go along with greater experience. Ninety-three percent of all assaults on psychiatric residents and 73% on medicine residents occurred in their first or second postgraduate year.

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For the psychiatry residents, most of the assaults occurred on a ward, open or closed. Three assaults occurred in emergency rooms, one in an automobile while escorting a patient and one in a hospital corridor. For the medicine residents, most of the assaults occurred in the emergency room. Several occurred in open wards and in intensive care units, and one each in a patient's room and in the admitting room. For both groups, other professional and nursing staff and students were present when the assault occurred. Police/security personnel were present during 20% of the assaults on medicine residents and during 28% on psychiatry residents.

The number of male assaulters was much greater than female (12 vs 3) for medicine residents, but not for psychiatry residents (8 vs 6). Most of the patients assaulting psychiatry residents were in their 20s-only three were older than 30 years, and the mean age was approximately 27. Patients assaulting medicine residents were considerably older, mean 41 years, and six of them were in their 50s and 60s. Patients committing the assault were the same sex as the resident half the time for the psychiatry physicians and 79% of the time for medicine residents. Slightly more than half of the psychiatry residents had had previous contact with those who assaulted them while medicine residents were less likely to have known the patient (4 of 14). A marked difference between the experiences of the two groups of residents related to whether an object was used in the assault. For the psychiatry residents, this occurred only once and it was incidental. However, for the medicine residents, an object was used in four of 15 assaults, with two of them constituting very serious threats. One was a knife and the other was a fragment of a smashed, glass IV bottle.

The psychiatry residents reported that most of the assaulting patients were psychotic. The exceptions were one with an organic personality disorder and two with borderline personality disorders. The most common diagnosis was schizophrenia. For the medicine residents, most of the assaults involved alcohol or drugs. Four patients were drunk, three were suffering alcoholic hallucinoses, and the two were high on drugs. One assaulter of a medicine resident was known to have serious psychiatric problems and another was described as having a history of violent behavior.

Discussion

In considering the results of this survey, the poorer rate of return from the Department of Medicine must be kept in mind. However, it may accurately reflect the fact that the issue is of less concern to medicine residents. The postgraduate year of the residents in medicine and the proportion of males and females who returned the questionnaire were identical to the overall distribution in that department. Each of the three hospitals served by the Department of Medicine (University, Wishard, V.A.) returned approximately the same proportion of questionnaires. The fellows in the Department of Medicine returned their questionnaires at a higher rate than those earlier in their training. The psychiatry residents, on the other hand, were much more reliable in responding, perhaps because each was known to the author. The five residents who did not return questionnaires were in the second, third and fourth year of residency. Further, if a resident had never been a victim of an assault, completion of the questionnaire and stuffing it into the return envelope would take less than a minute. However, a description of one or two assaults would take several minutes, and it is possible that this additional time requirement made assaulted residents less likely to complete and return the questionnaire.

As a number of the residents and fellows pointed out, the definition of assault provided was actually a definition of *battery*. Several commented that verbal threats were much more common in their dealings with patients. This was true for both psychiatry and medicine residents. Some of the verbal assaults, even though not conforming to the definition provided and thus not included in the results were equally or more disturbing than some of the relatively diffuse, undirected physical assaults.

One difference between the two departments was that medicine residents tended to be attacked mainly by older males while psychiatry residents were assaulted by young patients, both male and female. Usually, the patient was not known to the medicine resident. The psychiatrists were assaulted by psychotic patients, while medicine residents were assaulted primarily by patients involved with alcohol or drugs. Only one of the assaults against a psychiatrist involved an object and this was circumstantial in that the resident was trying to get a piece of glass away from a patient who was using it to cut herself. However, Ruben, *et al.*[12] reported that an object was used in one-third of the assaults on the psychiatric residents they investigated. Hatti, *et al.*[10] indicated that approximately 75% of the assaults on psychiatrists involved objects including chairs, ashtrays, tables, and in the case of outpatients, guns and knives. However, while Madden, *et al.*[9] did not report on the use of objects specifically, it can be inferred from their *Table 1* that it occurred infrequently. The medicine residents in this study were subjected to a number of attacks involving objects, two of them serious. Despite the Madden, *et al.*[9] report that many of their responders felt they had caused the assault, in the present study, a specific action on the part of the resident was rarely seen as provoking the attack. In those few instances, nevertheless, the action was always seen as an appropriate part of the care or examination of the patient.

The residents were asked if they had learned anything from the incident and most of them appeared to have derived an appropriate lesson. Examples: Be

especially careful if there is a history of assault; check leather restraints frequently; don't pull defense mechanisms out from under people (from a medicine resident); be especially careful in patients with chemical dependency.

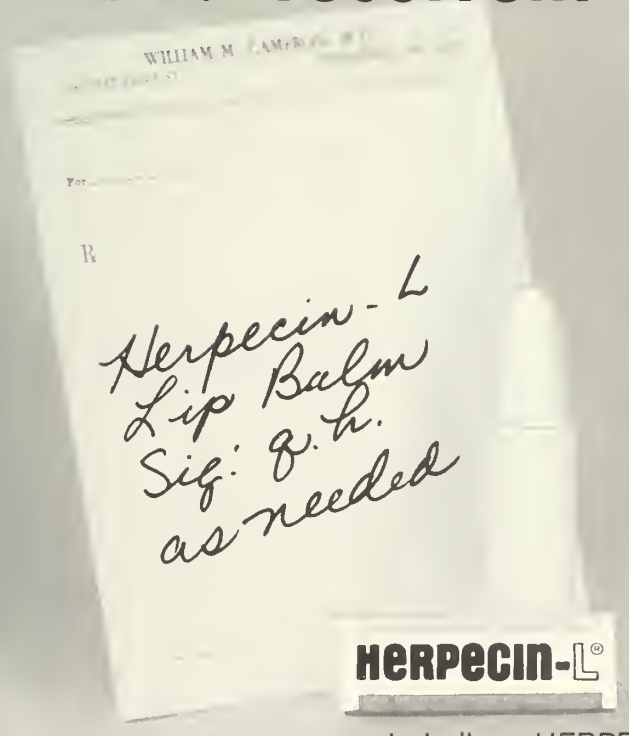
Several residents expressed the view that such assaults were an occupational hazard but some drew different sorts of lessons. These included more use of open areas with protection; maintaining physical distance from the patient; "don't ever drop your guard;" demand appropriate psychiatric evaluation; and avoid providing medical care to possibly psychotic patients.

If these latter statements reflect attitudes developed in response to assaults, they are disturbing and suggest that greater attention should be paid during residency training to the fact that such incidents occur. Findings from studies should be discussed so that pertinent conclusions are considered. A specific example is that the presence of police or security personnel is no guarantee that the resident will not be assaulted; the reverse may be more likely since their presence suggests a potential for violence.

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A Statewide Survey of Hospital Policy and Practice Concerning Cigarette Sales: A Follow-up Study

MOHAMMAD R. TORABI, Ph.D.[1]
JOHN R. SEFFRIN, Ph.D.[2]
RICHARD E. BRASHEAR, M.D.[3]

SMOKING HAS THE distinction of being this century's number one national public health enemy. Cigarette smoking has been identified as *the* major risk factor in both heart disease and lung cancer. As the Surgeon General's Report (1979)[1] states, "Cigarette smoking is the single most important preventable cause of death."

Recent reports from the National Center for Health Statistics (Advancedata, 1986)[2] indicate that in 1983, about 32% of U.S. adults smoked cigarettes, 45% had never smoked, and 23% were former smokers. A larger proportion of men smoked (36% compared to 29% for women). In general, there appears to have been a decline of approximately 10% in reported rates of smoking between 1977 and 1983.

Either smoking cigarettes or being exposed chronically to ambient sidestream smoke (involuntary smoking) creates inevitable health hazards.[3]

The prevalence of smoking, intensified advertising campaigns, and the destructive health effects of smoking on both smokers and non-smokers all indicate the importance of public education and the development of a workable public policy on smoking. Hospitals and their policies and practices on the sale of cigarettes are high on the list of public places that concern health experts. As a follow-up to a state-wide survey of hospital policy and practice concerning cigarette sales (1976),[4] this study was designed to do two things: to determine current practices and policies regarding the sale of cigarettes in Indiana's hospitals; and to compare these findings with the findings of the 1976 survey.

Methodology

A questionnaire was designed and reviewed by a jury of experts for clarity and subsequently refined for data collection. It was mailed to all 120 hospitals listed in the 1985 directory prepared by the Indiana State Board of Health. Appropriate administrators were asked to respond concerning policies and actual practices regarding the sale of cigarettes. The study tested the following hypotheses:

1. There is no significant relationship between the way hospitals are operated and their practice regarding the sale of cigarettes.

2. There is no significant relationship between having a health educator on staff and the hospital's practice regarding the sale of cigarettes.

3. There is no significant relationship between a hospital's smoking policy and the sale of cigarettes on its premises.

4. There is no significant relationship between the administrator's attitude about the sale of cigarettes and the actual practice regarding cigarette sales in the hospital.

Findings

Of 120 hospitals in Indiana, 114, or 95%, participated in this survey. About 17% of the hospitals were church operated, 38% were governmental, 40% were private and 4% indicated other or mixed means of proprietorship. About 68% had a health educator on staff.

With regard to hospital policy on smoking, 97% allow in-patients to smoke, and 92% allow out-patients to smoke in the hospitals. Visitors can smoke cigarettes in 90% of Indiana hospitals.

About 13% of those hospitals responding indicated that they sell cigarettes in the following ways: sell cigarettes by vending machine (6%); over-the-counter (5%); both machine and over-the-counter (2%).

About 91% of the hospital administrators believe that hospitals should not sell cigarettes, while approximately 4% believe the opposite; the remaining 4% indicated no definite opinion.

Related hypotheses were tested using the chi-square test. *Table 1* presents the distribution of hospitals by proprietorship and their practices regarding cigarette sales.

Table 1 indicates that no statistically significant relationship was found between hospital proprietorship and their respective practices regarding cigarette sales, supporting the first

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TABLE 1
Distribution of Hospitals,
by Whom They Are Operated, and
Their Practice of the Sale of Cigarettes (%)

Sale of Cigarettes	Who Operates Hospitals		
	Church	Government	Private
Yes	15	31	54
No	18	42	40

$X^2 = .86$; $p = .65$

TABLE 2
Distribution of Hospitals
by Whether or Not Having a Health Educator
on Staff Affects Their Practice
on the Sale of Cigarettes (%)

Sale of Cigarettes	Having a Health Educator	
	Yes	No
Yes	67	33
No	72	28

$X^2 = .15$; $p = .70$

TABLE 3
Distribution of Hospitals
by Policy on In-Patient Smoking and
Practice on Sale of Cigarettes

Sale of Cigarettes	In-Patients Allowed to Smoke	
	Yes	No
Yes	100	0
No	97	3

$X^2 = .47$; $p = .50$

TABLE 4
Distribution of Hospitals
by Whether They Think Hospitals
Should Sell Cigarettes and Their Practice
on Sale of Cigarettes

Sale of Cigarettes	Should Hospital Sell Cigarettes	
	Yes	No
Yes	33	67
No	1	99

$X^2 = 25.46$; $p = < .01$

hypotheses.

Data relating the distribution of hospitals by the presence or absence of a health educator on staff to practices regarding cigarette sales appear in *Table 2*.

By reviewing *Table 2*, it can be concluded that the second hypothesis also cannot be rejected. Whether or not a hospital staffs a health educator seems to have little bearing on that hospital's practice regarding the sale of cigarettes.

The distribution of hospitals by their in-patient smoking policy and their actual practice regarding cigarette sales is presented in *Table 3*.

The results of the chi-square test in *Table 3* indicate that no statistically significant relationship exists between policy on in-patient smoking and the actual sale of cigarettes; hypothesis 3 also cannot be rejected. Similar findings were obtained on the relationship between hospital policy on smoking for out-patients and visitors, and the sale of cigarettes by the hospitals.

Finally, *Table 4* shows the distribution of hospitals by their administrators' attitudes toward hospitals selling cigarettes and their own practice regarding cigarette sales.

It can be seen in *Table 4* that there is a highly significant relationship between whether the administrator thinks the hospital should sell cigarettes and whether or not the hospital actually does sell cigarettes. The strength of this relationship is shown with phi = .48. Hypotheses 4, therefore, must be rejected ($p < .01$).

Discussion

Only 13% of Indiana's accredited hospitals continued to sell cigarettes in 1986. This represents a significant and dramatic decline of 45% over the past decade. Ten years ago, according to an earlier study, 58% of Indiana's hospitals sold cigarettes either over-the-counter or through vending machines.

Since 1976, a number of factors have encouraged hospitals to reconsider their policies regarding cigarette smoking and sales. Not only has there been growing evidence in both the scientific and popular literature regarding the dangers of voluntary and involuntary smoking, but in Indiana, specific efforts have been exerted to persuade hospitals to quit selling cigarettes. For instance, following the 1976 report, Indiana chapters of both the American Cancer Society and the American Lung Association passed resolutions urging all hospitals to adopt a policy prohibiting cigarette sales on hospital grounds.

Another instructive comparison is to study the pattern of ways to sell cigarettes. In 1976, 30% of the hospitals sold cigarettes by machine, 5% over-the-counter, 18% both machine and over-the-counter, and 5% in other ways. By 1986, this pattern of the methods of sale had changed. Almost equal percentages of hospitals sold cigarettes by either machine or over-the-counter (6% and 5%, respectively), and 3% used both methods.

Other fascinating findings of this study are results of hypotheses testing, which was not done in 1976. No statistically significant relationships were found between the first three elements: the ways hospitals were being operated, the effects of having a health educator on staff, the smoking policy in hospitals and the cigarette sale practice of hospitals. However, a significant relationship was found between sale practices and whether a hospital administrator thought the hospital should sell cigarettes.

Although progress has been made in the last decade to limit the sale of cigarettes in hospitals, much still must be done to rethink hospital policy and practice concerning both the sale of cigarettes in hospitals and the tolerance hospitals still show toward smoking. In all fairness, medical doctors, health professionals, and particularly health educators deserve some credit for whatever success we can measure. Nevertheless, if we are to achieve a smoke-free society by the year 2000, not only must their roles in defining this policy be clearly described, but their responsibility toward seeing its implementation must also be clearly underscored.

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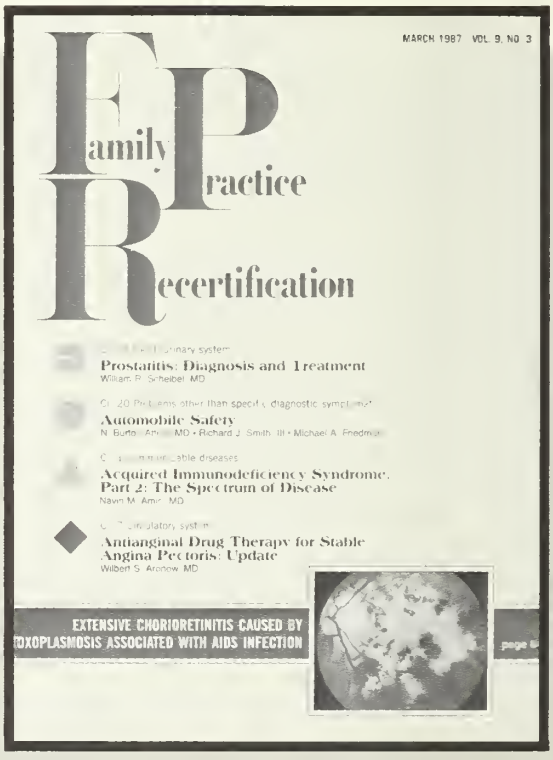
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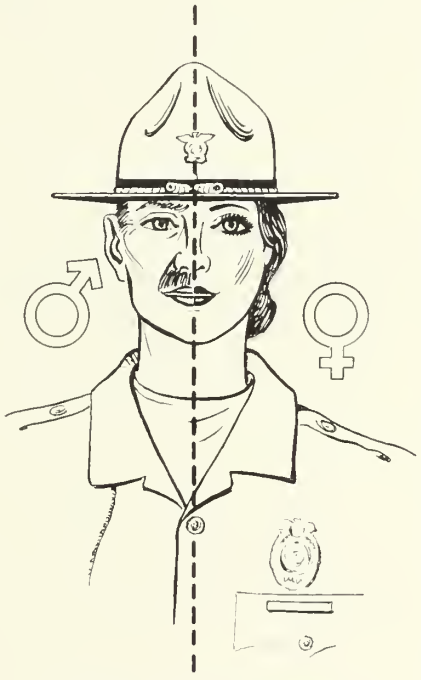
TED L. GRISELL, M.D.
Indianapolis

THIS TALE IS ABOUT a State Police Officer whose entire life was changed after a physical examination.

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ntraindications: Concomitant use with other potassium-sparing agents ch as spironolactone or amiloride. Further use in anuria, progressive nal or hepatic dysfunction, hyperkalemia. Pre-existing elevated serum tassium. Hypersensitivity to either component or other sulfonamide-rived drugs.

arnings: Do not use potassium supplements, dietary or otherwise, less hypokalemia develops or dietary intake of potassium is markedly npaired. If supplementary potassium is needed, potassium tablets ould not be used. Hyperkalemia can occur, and has been associated th cardiac irregularities. It is more likely in the severely ill, with urine lume less than one liter/day, the elderly and diabetics with suspected confirmed renal insufficiency. Periodically, serum K^+ levels should be termined. If hyperkalemia develops, substitute a thiazide alone, restrict $^+$ intake. **Associated widened QRS complex or arrhythmia requires ompt additional therapy.** Thiazides cross the placental barrier and pear in cord blood. Use in pregnancy requires weighing anticipated nefits against possible hazards, including fetal or neonatal jaundice, rombocytopenia, other adverse reactions seen in adults. Thiazides pear and triamterene may appear in breast milk. If their use is essential, e patient should stop nursing. Adequate information on use in children not available. Sensitivity reactions may occur in patients with or with- it a history of allergy or bronchial asthma. Possible exacerbation or tivation of systemic lupus erythematosus has been reported with iazide diuretics.

recautions: The bioavailability of the hydrochlorothiazide component of lyazide' is about 50% of the bioavailability of the single entity. heoretically, a patient transferred from the single entities of triamterene id hydrochlorothiazide may show an increase in blood pressure or fluid tention. Similarly, it is also possible that the lesser hydrochlorothiazide oavailability could lead to increased serum potassium levels. However, tensive clinical experience with 'Dyazide' suggests that these conditions ve not been commonly observed in clinical practice. Angiotensin- nverting enzyme (ACE) inhibitors can elevate serum potassium; use th caution with 'Dyazide'. Do periodic serum electrolyte determinations articularly important in patients vomiting excessively or receiving arenteral fluids, and during concurrent use with amphotericin B or rticosteroids or corticotropin (ACTH). Periodic BUN and serum reatinine determinations should be made, especially in the elderly, iabetics or those with suspected or confirmed renal insufficiency. umulative effects of the drug may develop in patients with impaired renal nction. Thiazides should be used with caution in patients with impaired epatic function. They can precipitate coma in patients with severe liver isease. Observe regularly for possible blood dyscrasias, liver damage, ther idiosyncratic reactions. Blood dyscrasias have been reported in atients receiving triamterene, and leukopenia, thrombocytopenia, granulocytosis, and aplastic and hemolytic anemia have been reported ith thiazides. Thiazides may cause manifestation of latent diabetes ellitus. The effects of oral anticoagulants may be decreased when sed concurrently with hydrochlorothiazide; dosage adjustments may be ecessary. Clinically insignificant reductions in arterial responsiveness norepinephrine have been reported. Thiazides have also been shown to crease the paralyzing effect of nondepolarizing muscle relaxants such s tubocurarine. Triamterene is a weak folic acid antagonist. Do periodic lood studies in cirrhotics with splenomegaly. Antihypertensive effects ay be enhanced in post-sympathectomy patients. Use cautiously in urgical patients. Triamterene has been found in renal stones in associa- on with the other usual calculus components. Therefore, 'Dyazide' hould be used with caution in patients with histories of stone formation. few occurrences of acute renal failure have been reported in patients n 'Dyazide' when treated with indomethacin. Therefore, caution is dvised in administering nonsteroidal anti-inflammatory agents with Dyazide'. The following may occur: transient elevated BUN or creatinine r both, hyperglycemia and glycosuria (diabetic insulin requirements may e altered), hyperuricemia and gout, digitalis intoxication (in hypokalemia), ecreasing alkali reserve with possible metabolic acidosis. 'Dyazide' nterferes with fluorescent measurement of quinidine. Hypokalemia is ncommon with 'Dyazide', but should it develop, corrective measures hould be taken such as potassium supplementation or increased dietary ntake of potassium-rich foods. Corrective measures should be instituted autiously and serum potassium levels determined. Discontinue correc- ve measures and 'Dyazide' should laboratory values reveal elevated erum potassium. Chloride deficit may occur as well as dilutional yponatremia. Concurrent use with chlorpropamide may increase the risk severe hyponatremia. Serum PBI levels may decrease without signs f thyroid disturbance. Calcium excretion is decreased by thiazides. Dyazide' should be withdrawn before conducting tests for parathyroid nction. Thiazides may add to or potentiate the action of other anti- ypertensive drugs. Diuretics reduce renal clearance of lithium and crease the risk of lithium toxicity.

dverse Reactions: Muscle cramps, weakness, dizziness, headache, ry mouth; anaphylaxis, rash, urticaria, photosensitivity, purpura, other ermatological conditions; nausea and vomiting, diarrhea, constipation, ther gastrointestinal disturbances; postural hypotension (may be ggravated by alcohol, barbiturates, or narcotics). Necrotizing vasculitis, aresthesias, icterus, pancreatitis, xanthopsia and respiratory distress ncluding pneumonitis and pulmonary edema, transient blurred vision, ialadenitis, and vertigo have occurred with thiazides alone. Triamterene as been found in renal stones in association with other usual calculus omponents. Rare incidents of acute interstitial nephritis have been eported. Impotence has been reported in a few patients on 'Dyazide', lthough a causal relationship has not been established.

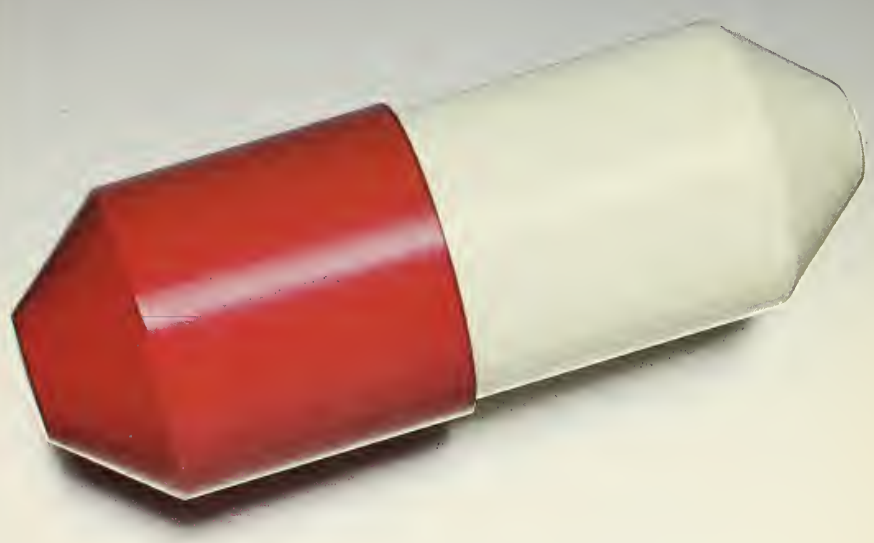
upplied: 'Dyazide' is supplied as a red and white capsule, in bottles of 000 capsules; Single Unit Packages (unit-dose) of 100 (intended for nstitutional use only); in Patient-Pak™ unit-of-use bottles of 100.

RS-DZ:L42

In Hypertension*... When You Need to Conserve K^+

Remember the Unique Red and White Capsule: Your Assurance of SK&F Quality

Serum K^+ and BUN should be checked periodically (see Warnings and Precautions).



Potassium-Sparing DYAZIDE®

25 mg Hydrochlorothiazide/**50 mg** Triamterene/SKF

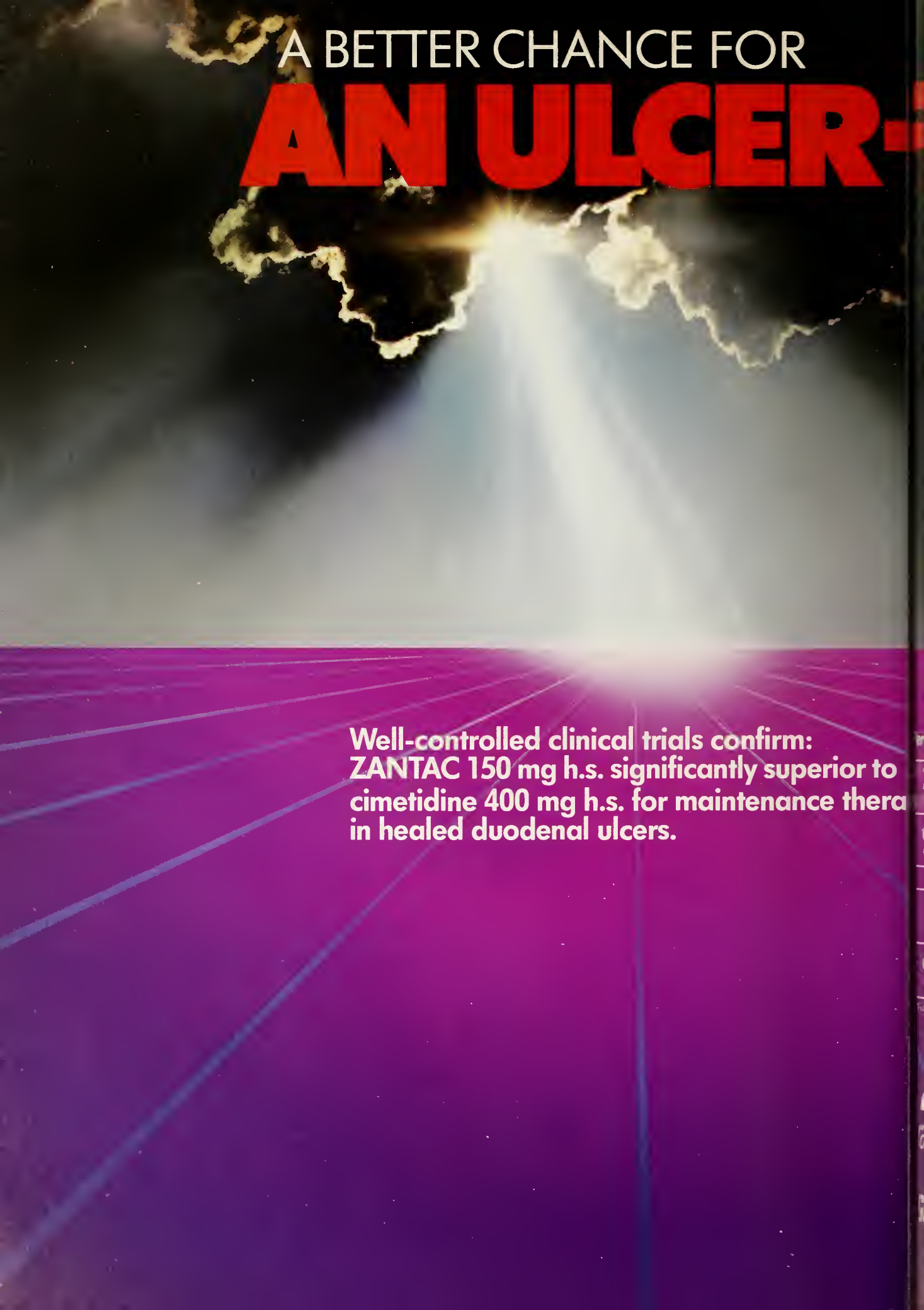
Over 20 Years of Confidence

The unique red and white Dyazide® capsule: Your assurance of SK&F quality.



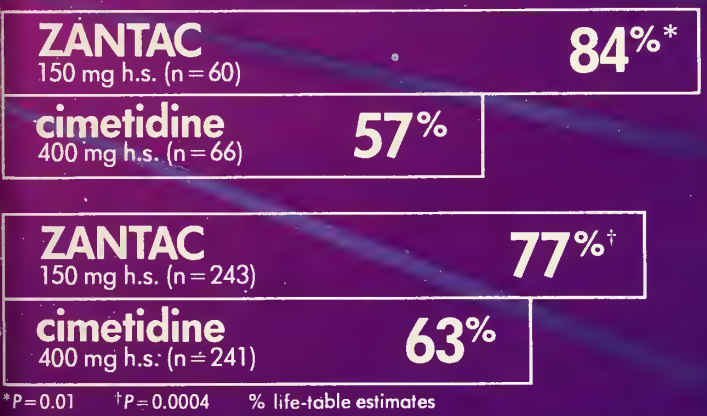
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A BETTER CHANCE FOR
AN ULCER-
Well-controlled clinical trials confirm:
ZANTAC 150 mg h.s. significantly superior to
cimetidine 400 mg h.s. for maintenance thera
in healed duodenal ulcers.

FREE FUTURE

Percent of patients ulcer-free after 1 year of therapy



*P = 0.01 †P = 0.0004 % life-table estimates

All patients were permitted prn antacids for relief of pain.
Adapted from Silvis[1] and Gaugh[2]

These two trials[1,2] used the currently recommended dosing regimen of cimetidine (400 mg h.s.) and ranitidine (150 mg h.s.). A comparison of other dosing regimens has not been studied.
The studied dosing regimens are not equivalent with respect to the degree and duration of acid suppression or suppression of nocturnal acid.
The superiority of ranitidine over cimetidine in these trials indicates that the dosing regimen currently recommended for cimetidine is less likely to be as successful in maintenance therapy.

Zantac® 150 h.s.
ranitidine HCl/Glaxo 150 mg tablets

Glaxo / ROCHE®

See next page for references and Brief Summary of Product Information.

ZAN375 July 1987

References: 1. Silvis SE, Griffin J, Hardin R, et al: Final report on the United States multicenter trial comparing ranitidine to cimetidine as maintenance therapy following healing of duodenal ulcer. *J Clin Gastroenteral* 1985;7(6):482-487.
2. Gaugh KR, Karman MG, Bardhan KD, et al: Ranitidine and cimetidine in preventian af duodenal ulcer relapse: A dauble-blind, randamised, multicentre, comparative trial. *Lancet* 1984;ii:659-662.

ZANTAC® 150 Tablets
(ranitidine hydrachlaride)
ZANTAC® 300 Tablets
(ranitidine hydrachlaride)

BRIEF SUMMARY OF PRODUCT INFORMATION

The following is a brief summary only. Before prescribing, see complete prescribing information in ZANTAC® product labeling.

INDICATIONS AND USAGE: ZANTAC® is indicated in:
1. Short-term treatment of **active duadenal ulcer.** Mast patients heal within four weeks.
2. **Maintenance therapy** far duadenal ulcer patients at reduced dasage after healing of acute ulcers.
3. The treatment af **pathalagical hypersecretary canditians** (eg, Zollinger-Ellisan syndrame and systemic mastocytosis).
4. Short-term treatment of **active, benign gastric ulcer.** Most patients heal within six weeks and the usefulness of further treatment has not been demonstrated.
5. Treatment of **gastroesaphageal reflux disease (GERD).** Symptomatic relief cammanly occurs within one or two weeks after starting therapy and is maintained throughout a six-week course of therapy.

In active duodenal ulcer; active, benign gastric ulcer; hypersecretory states; and GERD, concomitant antacids shauld be given as needed far relief of pain.

CONTRAINDICATIONS: ZANTAC® is cantraindicated for patients known to have hypersensitivity ta the drug.

PRECAUTIONS: Symptamatic respanse ta ZANTAC® therapy does not preclude the presence af gastric malignancy.

Since ZANTAC is excreted primarily by the kidney, dosage should be adjusted in patients with impaired renal function (see **DOSAGE AND ADMINISTRATION**). Caution shauld be observed in patients with hepatic dysfunction since ZANTAC is metabalized in the liver.

False-positive tests far urine protein with Multistix® may accur during ZANTAC therapy, and therefore testing with sulfosalicylic acid is recommended.

Although recammended dases of ZANTAC da nat inhibit the actian af cytachrome P-450 enzymes in the liver, there have been isolated reports of drug interactions which suggest that ZANTAC may affect the bioavailability af certain drugs by some mechanism as yet unidentified (eg, a pH-dependent effect on absorption or a change in valume af distributian).

Lack af experience to date precludes recommending ZANTAC for use in children or pregnant patients. Since ZANTAC is secreted in human milk, caution should be exercised when administered to a nursing mother.

ADVERSE REACTIONS: Headache, sometimes severe, seems ta be related to ZANTAC® administratian. Canstipation, diarrhea, nausea/vamiting, and abdominal discamfort/pain have been reparted. There have been rare reparts of malaise, dizziness, samnalence, insamnia, vertigo, tachycardia, bradycardia, premature ventricular beats, and arthralgias. Rare cases of reversible mental canfusian, agitation, depression, and hallucinations have been reported, predaminantly in severely ill elderly patients.

In narmal valunteers, SGPT values were increased ta at least twice the pretreatment levels in 6 af 12 subjects receiving 100 mg qid IV far seven days, and in 4 of 24 subjects receiving 50 mg qid for five days. With oral administration there have been accasianal reports of reversible hepatitis, hepatacellular ar hepatocanalicular or mixed, with ar withaut jaundice.

There have been rare reparts af reversible leukapenia, granulocytapenia, thrombocytopenia, and pancytopenia.

Although cantralled studies have shown no antiandrogenic activity, occasional cases af gynecamastia, impatence, and loss of libido have been reported in male patients receiving ZANTAC, but the incidence did nat differ fram that in the general papulation.

Incidents of rash, including rare cases suggestive of mild erythema multiforme, and, rarely, alapecia, have been reported, as well as rare cases of hypersensitivity reactions (eg, branchaspasm, fever, rash, eosinaphilia) and small increases in serum creatinine.

OVERDOSAGE: Information concerning possible averdasage and its treatment appears in the full prescribing infarmation.

DOSAGE AND ADMINISTRATION: Active Duadenal Ulcer: The current recammended adult oral dasage is 150 mg twice daily. An alternate dasage of 300 mg once daily at bedtime can be used far patients in whom dosing canvenience is impartant. The advantages af ane treatment regimen compared ta the ather in a particular patient papulatian have yet ta be demanstrated.

Maintenance Therapy: The current recommended adult oral dosage is 150 mg at bedtime.

Pathalagical Hypersecretary Canditians (such as Zallinger-Ellison Syndrame): The current recommended adult aral dosage is 150 mg twice a day. In some patients it may be necessary ta administer ZANTAC 150-mg dases mare frequently. Doses should be adjusted ta individual patient needs, and shauld cantinue as long as clinically indicated. Doses up ta 6 g/day have been employed in patients with severe disease.

Benign Gastric Ulcer: The current recommended adult oral dosage is 150 mg twice a day.

GERD: The current recammended adult aral dasage is 150 mg twice a day.

Dosage Adjustment for Patients with Impaired Renal Functian: On the basis af experience with a graup af subjects with severely impaired renal function treated with ZANTAC, the recommended dasage in patients with a creatinine clearance less than 50 ml/min is 150 mg every 24 hours. Shauld the patient's condition require, the frequency af dasing may be increased ta every 12 haurs ar even further with caution. Hemodialysis reduces the level of circulating ranitidine. Ideally, the dasage schedule shauld be adjusted so that the timing af a scheduled dose coincides with the end af hemadialysis.

HOW SUPPLIED: ZANTAC® 300 Tablets (ranitidine hydrachlaride equivalent ta 300 mg af ranitidine) are yellaw, capsule-shaped tablets embossed with "ZANTAC 300" an one side and "Glaxa" an the other. They are available in bottles of 30 (NDC 0173-0393-40) and unit dose packs af 100 tablets (NDC 0173-0393-47).

ZANTAC® 150 Tablets (ranitidine hydrachloride equivalent ta 150 mg of ranitidine) are white tablets embossed with "ZANTAC 150" on one side and "Glaxa" an the other. They are available in bottles of 60 tablets (NDC 0173-0344-42) and unit dase packs of 100 tablets (NDC 0173-0344-47).

Stare between 15° and 30°C (59° and 86°F) In a dry place. Pratect fram light. Replace cap securely after each apening.

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Glaxo

Glaxa Inc.
Research Triangle Park, NC 27709

Give five.

What you get back is immeasurable.

Just five hours a week. Just 5% of your income. It's not much to give, to the causes you really care about. But that small investment could change somebody's life. And it's hard to imagine a better return than that.

INDEPENDENT SECTOR

Ad Council



DIGEST OF HEALTH & MEDICAL LAWS

1987 INDIANA GENERAL ASSEMBLY

Indiana State Medical Association
3935 N. Meridian St. • Indianapolis, IN 46208 • (317) 925-7545 • 1-800-382-1721 (in Indiana only)

DIGEST OF HEALTH AND MEDICAL LAWS 1987 INDIANA GENERAL ASSEMBLY

Some 200 legislative proposals in the area of medicine and health care delivery were introduced in the 1987 session of the Indiana General Assembly. Of that number, less than half passed all of the legislative hurdles and were passed into law.

These new Indiana laws from the health/medical area have been summarized for you in this "DIGEST OF HEALTH AND MEDICAL LAWS." The new laws have been listed under several subject headings for easy reference.

If you have any questions, or would like more information on a particular law, please contact the Department of Government Relations of the Indiana State Medical Association at 1-800-382-1721 or 317/925-7545.

This "1987 Digest of Health and Medical Laws" was prepared by the ISMA's Department of Government Relations: Julie Newland, Director; Dan Boots, Legislative Assistant; and Cindy Lyons, Legislative Intern.

Alcoholic Beverages

● HEA 1669 — authorizes and provides for the compensation of victims of crimes resulting from the operation of a motor vehicle while intoxicated from the Violent Crime Compensation Fund;
—provides that any person who contracts with a responsible person who has been accused or convicted of a felony for a speaking engagement at which the person speaks about the felony must pay the Violent Crime Compensation Fund ninety percent (90%) of the money that would otherwise be owed to that responsible person.
This Act applies to violent crimes committed after September 1, 1987.

● SEA 246 — increases the periods for which a person's driver's license must be suspended by the court for convictions involving the operation of a motor vehicle while intoxicated;
—requires that a physician who obtains a blood, urine, or other bodily substance sample from a person at the request of a law enforcement officer or who performs a chemical test on such a sample to deliver the sample or disclose the results of the test to a law enforcement officer who requests it;
—establishes procedures for a person to petition for reinstatement of driving privileges when they have been suspended based on prima facie evidence that the person was operating a motor vehicle while intoxicated.
This Act takes effect July 1, 1987.

● SEA 289 — allows a law enforcement officer the discretion to offer a chemical test for intoxication to persons the officer suspects of operating a motor vehicle while intoxicated that was involved in a fatal accident or one involving serious bodily injury (prior law required the officer to offer the test to every person he suspected);
—requires that all chemical tests for intoxication must be administered within three (3) hours after a driver was involved in a fatal accident or one involving serious bodily injury;
—makes it a Class C misdemeanor for a person to operate a motor vehicle with a Schedule I or II controlled substance in their blood unless pursuant to a valid prescription or order of a practitioner.
This Act takes effect September 1, 1987.

● SEA 307 — specifies that a recent law enacted in 1984 allowing a person to recover treble damages, court costs, and attorney fees for offenses committed against his property does not apply to persons who suffer pecuniary loss as a result of criminal mischief or criminal trespass involving the operation of a motor vehicle unless the damage was intentionally inflicted.
This Act took effect upon its passage (May, 1987).

Anatomical Gifts

● SEA 124 — amends the law concerning anatomical gifts and provides that when an individual makes an anatomical gift on the individual's driver's license and that person dies, the person in possession of the individual's driver's license shall immediately produce the driver's license for examination upon request as provided under the Uniform Anatomical Gift Act.

Autism

● HEA 1195 — amends the Indiana Code concerning autism to require the institute for autism, in addition to its current duties, to conduct every three (3) years a statewide needs assessment study to determine the status of services provided and the need for additional or alternative services for autistic individuals and their families; provides that the institute shall report the results of this study to the General Assembly before December 1 of each year the study is conducted.
This Act takes effect September 1, 1987.

● SEA 195 — amends the law concerning autistic individuals to require the department of public welfare to apply for a Medicaid waiver to provide home and community based services to autistic individuals; requires the department of mental health to develop the waiver proposal consistent with federal laws; requires the proposal to be approved by the state budget agency before submission to the federal government.
This Act takes effect upon passage (May, 1987).

Children and Child Care

● SEA 148 — amends the law concerning juveniles to provide that a child born with a drug or alcohol addiction is a child in need of services; provides that a child born with an injury, abnormal physical or psychological development, or is at substantial risk of a life-threatening condition as a result of the child's mother being addicted to alcohol, a controlled substance, or a legend drug during the pregnancy is a child in need of services; sets out the conditions under which videotape testimony of a child may be used in proceedings concerning a child in need of services.
This Act takes effect upon passage (May, 1987).

● SEA 407 — amends the law that requires all newborns to be administered a blood test to detect inborn errors of metabolism with the testing done in designated laboratories;
—requires the state board of health to adopt rules and develop a system to insure centralized coordination, tracking, and follow-up of these tests as well as the appropriate diagnosis and management of affected newborns and counseling and support programs for their families;
—provides that the state board of health shall develop a laboratory quality assurance program including proficiency testing and a statewide network of genetic evaluation and counseling services;
—provides that these programs are to be funded through the collection of a newborn screening fee collected by the designated laboratories for each newborn tested. The board shall establish this fee based upon the projected cost of the program and the fee must be approved by the budget agency;
—requires the state board of health to adopt rules to set the fee and the procedures for disbursement;
—provides that the newborn screening fund at the end of the fiscal year does not revert to the state general fund.
This Act takes effect September 1, 1987.

Communicable Diseases/Public Health

● HEA 1010 — adds a new chapter to allow the state board of health to adopt rules to define and classify communicable diseases and other diseases that are a danger to health and to establish reporting, monitoring, and preventive procedures for those diseases; diseases;
—requires each physician, administrator of a hospital or their representative, or the director of a medical laboratory or designee to report to the local or state health officer the information required to be reported by rule for communicable/dangerous diseases;
—requires physicians, hospitals, and medical laboratories to report to the state board of health each confirmed case of AIDS and that failure to report the information required by the state board of health is a Class A infraction;
—establishes a definition and procedure for informed consent for purposes of an examination for the prevention of the transmission of a communicable/dangerous disease;
—allows the local health officer or the secretary of the state board of health with reasonable grounds to ask an individual for written informed consent to be examined to prevent the transmission of the disease;
—establishes proceedings to be taken if the individual refuses to be examined; specifies that the health officer must obtain a court order and that the court hearing must be held in camera at the request of the individual;
—provides that if an individual is diagnosed with a communicable disease and is a serious and present danger to health, the health officer may obtain a court order for restrictions, including isolation, and shall implement the least restrictive but medically necessary procedures to protect the public's health;
—permits a local health officer to exclude from school a student who has a dangerous communicable disease that is transmissible through normal school contacts and to issue a certificate of health to admit the student when the student does not have a dangerous communicable disease;
—establishes that information collected under this law is confidential but does allow the information to be released if the individual is not identified under certain circumstances;
—establishes penalty provisions for the improper release of this information (Class A misdemeanor);
—provides that this new law is not intended to interfere with the right of an individual to select any mode of treatment, including spiritual healing;
—requires the attending physician/health care provider to prepare and attach to the body of a deceased individual when the physician knows that the individual had at least one of a listing of disease processes present at the time of death a conspicuous notice: "Observe Body Fluid Precautions." The disease processes listed include hepatitis, HTLV-3, herpes, malaria, rabies, and others;
—establishes confidentiality provisions regarding a deceased person's communicable disease;
—establishes a Class C misdemeanor for improper release of this information and a Class C misdemeanor for failure to give the notice required to persons disposing of the body;
—establishes procedures for sending a child home from school who is ill, has a communicable disease, or is infested with parasites, and for readmitting the child to school.
This Act takes effect September 1, 1987. Any rules adopted prior to that date are in effect until the new rules are promulgated or December 31, 1988, whichever occurs first.

● HEA 1024 — makes it a felony to tamper with a consumer product or its label to knowingly make a false report that there has been or there will be tampering with a consumer product introduced into commerce.
This Act takes effect September 1, 1987.

● HEA 1586 — requires physicians or health care providers to prepare and attach to the body of a deceased individual whom the physician knew had at least one of several disease processes present at the time of death a conspicuous notice with the statement: "Observe Body Fluid Precautions." These disease processes include hepatitis, HTLV-3, herpes, malaria, and rabies;
—requires this information to be kept confidential by the physician or other person in possession of the body. A violation of this provision is a Class C misdemeanor;
—provides that persons who fail to provide the notice under this section commit a Class C misdemeanor.
This Act takes effect September 1, 1987.

● SEA 72 — amends the law concerning communicable diseases to require that the state board of health and the state board of education must provide information stressing the moral aspects of abstinence from sexual activity as the best method for the prevention of Acquired Immune Deficiency Syndrome (AIDS). The literature provided must state that the best way to avoid AIDS is for young people to refrain from sexual activity until they are ready as adults to establish, in the context of marriage, a mutually faithful monogamous relationship. These materials may not be distributed to schoolchildren without the consent of the governing body of the school corporation where the schoolchildren attend.
This Act takes effect January 1, 1988.

● SEA 359 — requires that a physician who diagnoses a pregnancy shall administer a blood test during the third trimester of pregnancy and send the sample to an approved laboratory for a standard serological test for syphilis (that is in addition to the serological test done at the time of the diagnosis of the pregnancy);
—removes the prohibition on the issuance of a marriage license to a persons afflicted with a venereal disease;
—removes the requirement for a premarital test to diagnose syphilis.
This Act takes effect September 1, 1987.

County Coroners

● HEA 1233 — amends the law concerning elections to provide that persons who filled vacancies in the office of county auditor, county recorder, country treasurer, county sheriff, or county coroner under the election law that existed prior to March 4, 1986, hold an appointment pro tempore. That is, if the length of time an individual may hold a particular office is limited, the time served while filling the vacancy does not count toward the length of time that individual may hold the office.
This Act takes effect September 1, 1987.

● HEA 1349 — requires county coroners to file with the person in charge of interment a coroner's certificate of death within 72 hours after being notified of the death;
—provides that a person who knowingly or intentionally fails to immediately notify the coroner or a law enforcement agency of a person who has died from violence or in an apparently suspicious or unnatural manner commits a Class B infraction;

–provides that a person who moves or transports from the scene of the death the body of the deceased who has died from violence or in a suspicious manner without the permission of the coroner or law enforcement officer commits a Class D felony.
This Act takes effect September 1, 1987.

Drugs

● HEA 1336 — amends the law concerning controlled substances by adding the hallucinogenic substance Dronabinol to the list of Schedule II drugs. This enables physicians to prescribe Dronabinol for the treatment of cancer patients in compliance with federal law
This Act takes effect immediately (May, 1987).

● HEA 1551 — defines "drug sample" as a legend drug or a controlled substance that is manufactured, packaged, labeled, or otherwise marketed to be distributed and dispensed without consideration.
–makes it a Class B misdemeanor for a practitioner, pharmacist, manufacturer, wholesaler, or an employee or agent thereof to knowingly or intentionally remove a drug sample from its original package, repackage it, and deliver it to an ultimate user in exchange for money or other property;
–makes it a Class B misdemeanor for any such person to knowingly or intentionally deliver a drug sample to an ultimate user when the expiration date of the drug sample has passed.
This Act takes effect September 1, 1987.

● HEA 1697 — updates the legend drug statutes and creates a new legend drug definition;
–changes the membership on the Controlled Substances Advisory Committee to add one physician, one pharmacist, one veterinarian one podiatrist, and one dentist appointed by the governor in addition to three members appointed by the governor who have demonstrated expertise concerning controlled substances;
–provides that the advisory committee shall administer any computerized prescription data program;
–provides that the advisory committee shall adopt rules to set standards related to the registration and control of controlled substances including recordkeeping and dispensing requirements, set fees, and other responsibilities already defined under law; provides that the health professions bureau shall provide staff to this committee
–allows the pharmacy board to reclassify controlled substances to a less restrictive schedule in compliance with federal law;
–provides that if the board reclassifies a controlled substance the board shall recommend the same reclassification to the general assembly;
–provides that the advisory committee may adopt rules to establish a computerized prescription on date program recommended by the study committee before December 31, 1988, but the rules may not take effect before April 1, 1988;
–authorizes the advisory committee to maintain a secure centralized computer data base for monitoring excessive prescribing and dispensing of prescription drugs if so recommended by the study committee;
–establishes the Prescription Abuse Study Committee to study the prescription drug abuse problems in Indiana and to make recommendations to the legislature before November 1 of each year and to make recommendations to the advisory committee for administrative solutions before December 31, 1988;
—the study committee consists of 18 persons, including physicians, pharmacists, and representatives of pharmaceutical manufacturers, substance abuse rehabilitation centers, hospitals, the DEA, state police, the medical licensing board, the pharmacy board, the health professions bureau, nursing, a prosecuting attorney, health facilities, business/industry, and a psychologist. These persons are appointed by the governor and shall serve until December 31, 1988;
—provides that the study committee is to recommend to the advisory committee before December 31, 1988, whether a computerized prescription data program should be established by the advisory committee;
—establishes confidentiality provisions for the information recorded on a prescription form and the release of this information;
—establishes penalty provisions for the unauthorized possession of a prescription form used for a computerized data program.
This Act takes effect upon passage (May, 1987).

● HEA 1875 — amends the Indiana Code concerning criminal law and procedure to establish procedures for school personnel to report violations of controlled substances laws that occur on or within 1,000 feet of school property. This act provides for immunity from civil damages or penalties for the reporter and also provides for confidentiality privileges. A report is not required if the reporter would have to disclose confidential information to make the report.
Part of this act takes effect July 1, 1987; part takes effect January 1, 1988.

● SEA 193 — creates a grant program for those school corporations which will use the money to provide drug prevention, intervention, and rehabilitation referral services to students.
This Act takes effect July 1, 1987.

● SEA 358 — increases the penalty to a Class A felony (from a Class B felony) for dealing in cocaine, narcotic drugs, or controlled substances in Schedules I, II, or III if the dealing occurs within 1,000 feet of school property or on a school bus; increases the penalty for dealing or possessing controlled substances in Schedules IV and V, as well as marijuana, hash oil, or hashish, if the dealing or possession occurs within 1,000 feet of school property or on a school bus.
This Act takes effect September 1, 1987.

Home Health Care

● HEA 1094 — adds a new definition of life-threatening emergency for endangered adults, including the immediate care or treatment required to alleviate the threat to the endangered adult;
—requires individuals who believe or who have reason to believe that an individual is an endangered adult to report this information. The individual who is a member of a hospital staff and other facility shall report this information to the person in charge of the hospital/facility who also becomes responsible to report this information;
—establishes civil and criminal immunity for those persons who in good faith report this information or who make or cause photographs or x-rays of the endangered adult to be taken;
—requires law enforcement agencies that receive an endangered adult report to communicate this information to the adult protective services unit;

—establishes procedures to require protective services and an emergency protective services order;
—establishes a Community and Home Options to Institutional Care for the Elderly and Disabled Program;
—establishes case management procedures including assessment of the individual, development of a care plan, monitoring the quality of community and home care services, and more;
—defines community and home care services that include case management services, homemaker services and attendant care, respite care and other support services, adult day care, home health services and supplies, home delivered meals, transportation, and other services necessary to prevent institutionalization when feasible;
—defines an eligible individual as someone over age 60 or who is disabled and who meets the board's eligibility requirements;
—establishes the community and Home Options to Institutional Care for the Elderly and Disabled Board consisting of nine persons including state agency representatives, citizen representatives of the elderly and disabled, and a licensed physician, nurse, or nurse practitioner who specializes in gerontology. These persons are appointed by the governor for two year terms;
—requires the board to establish long-term goals for a continuum of care for the elderly and disabled, to review state policies on community and home care services, to evaluate the cost effectiveness of a state administered system of community and home care services and to develop policies;
—establishes responsibilities for the state department in administering this program including administering state and federal funding, reviewing and approving community and home care services, and providing training and technical assistance for the staff providers;
—amends the law dealing with comprehensive care beds owned, controlled, or operated by a religious organization not controlled by a hospital and the sale or lease of these beds.
The section of this Act that concerns comprehensive care beds takes effect July 1, 1987. The other sections of this Act take effect September 1, 1987.

Hospitals and Health Facilities

● HEA 1745 — amends the health planning law to remove the requirement that when the state board of health determines the adequacy of existing beds in health care facilities licensed under 16-10-4 and comprehensive care beds they must consider that a 90% utilization rate or less is adequate;
—provides that the health facilities council may recommend a preliminary approval of a proposed project before the conversion of existing health facility beds to ICF/MR beds or the construction of a new ICF/MR facility if it is determined that there is an insufficient number of available beds to be appropriate for placement in an ICF/MR facility;
—provides that the council shall review all applications for approval to construct comprehensive care beds certified for reimbursement under Medicaid and that the council shall recommend and the board shall approve additional certified comprehensive care beds if the beds will not reduce utilization below 84% in that county;
—establishes timetables for project approval and construction plans for comprehensive care bed projects;
—allows a hospital beginning January 1, 1986, to convert up to 30 acute care beds to skilled comprehensive long term care beds, reimbursable under Medicaid, if those beds will function essentially as nursing home beds;
—provides that if the number of comprehensive care beds in a hospital which function as nursing home beds exceeds 50% of the beds in the hospital, the comprehensive care beds must be licensed;
—provides that the health facilities council shall recommend that the state board of health issue licenses to convert not more than 1,000 licensed health facility beds to beds to be used in ICF/MRs and establishes criteria for selection of facilities. This conversion section expires July 1, 1988;
—requires the commissioner of mental health to annually publish the need for psychiatric beds in Indiana (including alcohol and drug treatment beds);
—establishes procedures for the conversion of hospital beds to psychiatric beds and for beds in health care facilities. (This section expires 1/1989).
This Act takes effect July 1, 1987.

● HEA 1782 — provides that money held by a hospital bonding authority may be invested in the manner determined by the authority (prior law dictated how this money could be invested).
This Act takes effect September 1, 1987.

● HEA 1879 — amends the law concerning county hospitals and health centers. This act provides that any county which contains only two (2) second class cities and maintains or owns a county home shall name and operate its county home as the "__ Health Center." This act provides that the board of managers of the health center shall include at least three (3) physicians. The act also provides that board members may not serve more than two (2) consecutive terms and raises the maximum compensation of board members from twenty-five hundred dollars ($2500.00) to thirty-six hundred dollars ($3600.00) per annum.
This Act takes effect July 1, 1987.

● SEA 63 — provides that copies of the state examiner's report of a public hospital shall be filed at that county's public library (at the request of the library) and that these reports are to be open to public inspection.
This Act takes effect September 1, 1987.

● SEA 394 — permits a physician with an unlimited license to practice medicine to be appointed to the governing boards of county hospitals and certain local hospitals that receive public funds or are governed by a governmental unit;
—allows an individual to serve on the governing board or board of trustees of a county hospital who has a pecuniary interest in a contract or purchase connected with the hospital if that person discloses that interest to the board and to the state board of accounts and abstains from voting on any matter affecting that interest;
—clarifies that all contracts entered into for a public work are subject to the prevailing wage law;
—allows the board of a county hospital to invest hospital funds as it determines (prior law held county hospitals subject to the public deposit and investment laws).
This Act took effect upon its passage (May, 1987).

● SEA 449 — provides that a regional blood bank may contract as a participating provider with the Indiana health facility financing authority for financing, refinancing, leasing, or acquiring health facility property.
This Act takes effect immediately (May, 1987).

Insurance

● SEA 106 — establishes criteria for long-term care insurance cies in Indiana as a policy that provides coverage for at least 12 nsecutive months for diagnostic, preventive, therapeutic, re-abilitative, maintenance or other personal care services provided a setting other than an acute care wing of a hospital;
-provides that the long-term care insurance policy does not in-ude an insurance policy offered to provide basic hospital ex-nse coverage, basic medical-surgical, major medical, compre-nsive coverage, catastrophic coverage, and others;
-provides that the Insurance Commissioner is to adopt rules by ne 1, 1988, establishing standards for the long-term care in-rance policies including terms of renewability, coverage of pendents, preexisting conditions, elimination periods, and re;
-provides that the rules adopted by the commissioner must, ere appropriate, recognize the distinctions between group and dividual policies;
-provides that an insurer may not cancel or decline to renew a ng-term care insurance policy solely on the grounds of the age or terioration in mental or physical health of the policy holder;
-establishes a definition for ''preexisting condition'';
-provides that a long-term care insurance policy may exclude verage for a loss/confinement that is the result of a preexisting ndition only if the loss/confinement begins within 12 months owing the effective date of coverage of an insured who is 65 or der on the effective date of the coverage or 24 months following e effective date of coverage of an insured who is less than 65 on e effective date;
-establishes that the policyholder may return the long-term care surance policy within 10 days and have the premium refunded if e policyholder is not satisfied;
-establishes that the policyholder insured under a long-term care surance policy issued under a direct response solicitation may turn the policy and have the premium refunded within 30 days of e delivery of the policy;
-provides that the insurer shall deliver an outline of coverage pro-ded by an individual long-term care insurance policy that ust include a description of the principal benefits and coverage, incipal exclusions, renewal provisions, and more;
-sets out provisions for group long-term care insurance policy rtificates delivered in Indiana including a description of the prin-pal benefits and coverage, exclusions, reductions, and more;
-adds a definition of Medicare Supplement Insurance Solicita-ons which does not include a group policy issued to or for the nefit of employees, to one or more labor organizations or to the ustees of a fund established by one or more employees or former mployees or members of a labor organization. Also provides that e term does not include a group policy issued to a professional, ade, or occupational association;
-provides that during a Medicare Supplement Insurance Solicita-on, an agent shall give the individual a receipt for materials ceived by the agent as a result of the solicitation.
his Act takes effect June 1, 1988. The rules that are to be pro-mulgated under this Act are to be adopted by June 1, 1988, and ust take effect June 1, 1988.

● SEA 107 amends the insurance law to add a definition for ersons who are at least 65 years of age who participate in the In-iana Long-Term Care Program;
-adds a new chapter to establish a definition for long-term care as the provisions of services in a non-acute care hospital setting to enable individuals whose functional capacities are chronically impaired to be maintained at their maximum level of health. The services covered are: physician, nursing, diagnostic, therapeutic, rehabilitative, maintenance, personal care, transportation, day care, home health, respite care, nursing home care, chiropractic, podiatric, and optometric;
—provides that a long-term care insurance coverage plan is for at least 12 months for one or more necessary long-term care services provided in a non-acute care hospital setting (this does not include payment of coinsurance, deductibles, or payment for services covered by Parts A and B of Medicare);
—establishes the Indiana Long-Term Care Program to provide incentives for persons to insure against the costs of providing for their long-term care needs, to provide a mechanism for persons to qualify for coverage of the costs of their long-term care needs under Medicaid without first being required to exhaust all their resources, to provide counseling services to individuals in planning for their long-term care needs, and to alleviate the financial burden on the Medicaid program by encouraging the pursuit of private initiatives;
—provides that anyone over age 65 may participate in the Indiana Long-Term Care Program by applying to the Indiana Department of Public Welfare;
—provides that the department of public welfare shall counsel an individual who applies for this program about the availability of long-term care insurance policies, the availability of Medicare supplemental insurance policies, Part A and B of Medicare, and prepaid health care delivery plans;
—provides that those persons financially eligible under this program may apply to the department of public welfare for payment in whole or in part of the premiums for enrolling in a long-term care option plan. The department of public welfare is to establish financial eligibility standards under this section;
—provides that persons enrolled in Parts A and B of Medicare, or enrolled in a prepaid health care delivery plan that provides acute care and preventive services, and are the beneficiaries of a qualified long-term care policy approved by the state or enrolled in a prepaid health care delivery plan that provides long-term care services are eligible for Medicaid assistance under the long-term care program for costs incurred that are not already paid for through another program;
—provides that the department of public welfare shall request the necessary Medicaid waivers for assistance under Medicaid in the long-term care program and shall adopt rules for implementation;
—provides that the state budget agency shall study the feasibility of an expenditure neutral program where the department of public welfare may supplement the premiums for long-term care options for those who meet the financial eligibility requirements. The results of this study are to be reported to the legislative leadership before October 1, 1988. In addition, the state is to appropriate $25,000 for conducting the study, beginning July 1, 1987.
The sections of this Act dealing with the study, the waiver request from the federal government, and the budget appropriation take effect immediately.
The sections of this Act dealing with the establishment of the Indiana Long-Term Care Program and the criteria take effect July 1, 1989.

● SEA 192 — makes numerous changes in the law concerning prepaid health care delivery plans;
—establishes requirements for special service health care plans to

obtain a certificate of authority;
—requires additional documents to be filed with the Department of Insurance when applying for a certificate of authority;
—requires prepaid health care delivery plans to file contracts of reinsurance with the Insurance Commissioner;
—requires information filed annually with the Commissioner to designate the number of Indiana enrollees;
—requires each plan to provide all enrollees with complete and clear statements explaining the provisions of the plan;
—requires the rates to be used by such plans to be based actuarially and not be excessive or inadequate;
—provides civil penalties for noncompliance with these new requirements.
This Act takes effect July 1, 1987.

● SEA 440 — allows the Commissioner of the Indiana Department of Insurance to impose a civil penalty of $500 on an insurance company that fails to file an annual statement as required by present law;
—provides for "free look" periods for all individual accident and health insurance policies, other than those issued pursuant to direct response solicitation, in which the policyholder has a right to return the policy within ten (10) days and have the premium refunded if the policyholder is not satisfied for any reason (policyholders of policies issued pursuant to a direct response solicitation have a free look period of thirty (30) days);
—provides that all accident and sickness insurance policies which provide coverage on an expense incurred basis or on a provision of service basis for an individual, subscriber, or family member thereof shall provide that the benefits applicable for the individual, family member, or children shall be payable with respect to a newly born child of the insured from the moment of birth.
This Act takes effect September 1, 1987.

Informed Consent

● HEA 1758 — establishes procedures for consenting to the individual's own health care if the individual is an adult, or a minor and is emancipated;
—provides that an individual may consent to health care unless in the good faith opinion of the attending physician the individual is incapable of making a decision regarding the proposed health care;
—establishes procedures for consenting to health care if the individual incapable of consenting has not appointed a health care representative of if the representative declines to act, whereby health care consent may be given by a judicially-appointed guardian of the person, by a spouse, parent, adult child, or adult sibling if there is no guardian known or reasonably available or by the individual's religious superior if the individual is a member of a religious order and there is no guardian present;
—provides that consent to health care for a minor not authorized to give consent may be given by a judicially-appointed guardian of the person, by a parent or an individual in loco parentis if there is no guardian, or by an adult sibling if there is no guardian available;
—provides that an individual authorized to consent to health care for another who for a period of time will not be reasonably available may delegate the authority to another eligible person (the delegation must be in writing, signed, and witnessed, with other provisions);
—provides that a health care provider or any interested individua may petition the probate court to make a health care decision o order health care for an individual incapable of consenting or ap point a representative to act for that individual;
—provides that the probate court may order health care, appoint representative to make a health care decision, or order any othe appropriate relief if it finds a health care decision is required fo the individual and the individual is incapable of consenting t health care, and there is no individual authorized to consent;
—provides that an individual may disqualify others from consen ting to health care for that individual if that individual may consen to their own health care;
—establishes provisions where the health care provider is immun from criminal or civil liability if acting in good faith;
—provides that this law does not affect the Indiana Life Prolongin Procedures and Living Will Law;
—provides that this law does not affect any other Indiana law con cerning consent to observation, diagnosis, treatment, or hospitali zation for a mental illness or any other Indiana law concernin when consent is required for health care, elements of informe consent, or health care rendered in an emergency;
—provides that a representative consenting to health care for a individual does not become personally liable for the cost of th health care by virtue of the consent.
This Act takes effect upon passage (May, 1987).

● SEA 409 — creates a rebuttable presumption that a patient' consent to a treatment is an informed consent if the consent is i writing, signed by the patient, witnessed by another individual and the patient's condition has been explained, orally or i writing, to the patient prior to the treatment;
—the explanation given to the patient must include:
- the general nature of the patient's condition,
- the proposed treatment,
- the expected outcome of the treatment,
- the material risks of the treatment, and
- the reasonable alternatives to the treatment;

—specifies that a patient's consent does not have to be in writin pursuant to this new law to create an informed consent; this nev law merely creates a rebuttable presumption that the consent is a informed consent if these conditions are met;
—requires the Commissioner of the Indiana Department of Insur ance to notify a health care provider whether that provider is quali fied under the Patient's Compensation Fund and, if so, the date the provider becomes qualified within five (5) business days of his receipt of the information required for qualification of a provide under the Fund.
This Act takes effect September 1, 1987.

Licensure/Certification

● SEA 262 — requires a dentist to have a permit to administer general anesthesia, deep sedation, or light parenteral conscious sedation to a patient;
—provides that the permits are administered by the state board of dental examiners and that the requirements for a permit must be based on the American Dental Association's "Guidelines for Teaching the Comprehensive Control of Pain and Anxiety in Dentistry";
—provides that the permits must be renewed biennially;

–requires the board to establish by rule the educational and training requirements for the issuance and renewal of the permit as well as the establishment of requirements for a program of education and training for pediatric anesthesiology;
–provides that dentists who demonstrate to the board that the dentist has competently used the pain and anxiety control method for at least five years before January 1, 1988, does not need to obtain a permit;
–defines deep sedation, general anesthesia, and light parenteral conscious sedation.
The section of this Act requiring the board to issue rules before January 1, 1988, for educational and training requirements takes effect June 1, 1987. The remainder of the Act takes effect January 1, 1988.

- SEA 364 — amends the statutory definition of "physical therapy" to mean the evaluation of, administration of, or instruction in physical rehabilitative and habilitative techniques and procedures to evaluate, prevent, correct, treat, alleviate, and limit physical disability, pathokinesiological function, bodily malfunction, pain from injury, disease, and any other physical disability or mental disorder, including the use of physical measures, agents, and devices for preventive and therapeutic purposes, neurodevelopmental procedures, the performance, interpretation and evaluation of physical therapy tests, and the provision of consultative, educational and other advisory services for preventing or reducing the incidence and severity of physical disability, bodily malfunction, and pain;
–allows a psychologist to refer patients to a physical therapist;
–prohibits a physical therapist from evaluating a physical disability or mental disorder except upon the order of a physician, podiatrist, psychologist, chiropractor, or dentist;
–allows the physical therapy committee to approve and utilize the services of a testing company to prepare and score examinations for licensure.
This Act takes effect September 1, 1987.

- SEA 516 — provides that all Indiana physicians' licenses, beginning June 30, 1987, will expire on June 30 of each odd-numbered year and will be renewed for a period of two (2) years effective upon its passage);
–abolishes the three month grace period in which a physician could renew his license making a physician's license not renewed by June 30 AUTOMATICALLY INVALID AND SUBJECT TO A LATE PENALTY (EFFECTIVE UPON ITS PASSAGE);
–allows the Health Professions Bureau to delay the issuance of a license renewal for up to ninety (90) days to allow the respective board to investigate reports that the applicant may have committed and act for which he may be disciplined;
–allows the Executive Director of the Health Professions Bureau to provide advice and technical assistance to a board or committee upon their request (legal advice is specifically excluded and reserved to the Attorney General of Indiana — effective upon its passage);
–allows the Medical Licensing Board to consider any malpractice judgments or settlements against an applicant upon applying for licensure in Indiana (effective upon its passage);
–provides that the Medical Licensing Board may refuse to issue a license or may issue a probationary license to an applicant if the applicant has been disciplined in another state and the board determines that this conduct has a direct bearing on the applicant's ability to practice medicine competently (effective upon its passage);
—allows the Medical Licensing Board, upon its issuing of a probationary license, to impose any or any combination of the following conditions:

- report regularly to the board,
- limit the licensee's practice to certain areas,
- continue or renew professional education,
- perform or refrain from performing any acts that the board considers appropriate to the public interest or to the rehabilitation of the practitioner;
- engage in community services without compensation

(effective upon its passage);
—provides that a practitioner is subject to disciplinary sanctions by the respective board if that board finds that the practitioner has continued to practice although he has become unfit due to an abuse of alcohol or drugs which endangers his ability to practice safely, or if the practitioner has diverted a legend drug or any drug or device issued under a drug order for another person (effective upon passage);
—prohibits a board from reinstating a license that has been revoked and prohibits that licensee from applying for new licensure for a period of seven (7) years (effective upon its passage);
The remaining portions of this Act take effect September 1, 1987.

Medical Education

- SEA 233 — adds a new chapter to Indiana law to establish the Indiana Medical and Nursing Grant Fund;

—provides that the state board of health shall annually designate the counties, cities, towns, and townships in Indiana that are underserved by physicians and by nurses and that these areas are to be ranked;
—establishes the Indiana Medical and Nursing Grant Fund to provide grants to physicians and nurses to encourage full-time practice in shortage areas (The fund is administered by the state board of health);
—provides that money in the fund at the end of the fiscal year does not revert to the state general fund. The administrative costs paid from the fund may not exceed $10,000 per year;
—provides that a physician is eligible to apply for a grant who holds an unlimited license to practice medicine/osteopathic medicine and who agrees to establish a general practice, family practice, general internal medicine practice, or general pediatrics in a shortage area;
—provides that registered nurses may apply for a grant if they agree to become employed in a shortage area and if they provide evidence that the grant is to be used as a supplement to and not a replacement for the salary that would normally be paid for an equivalent position in that shortage area;
—stipulates that before a grant is made, the community where the shortage area has been designated must obtain a community grant which is at least 50% of the initial state board of health grant. The fiscal body of the shortage area must adopt a resolution supporting a community grant;
—establishes criteria for the contract that must be drawn up for the physician or nurse, state board of health, and fiscal body of the shortage area to sign;
—provides that the state health commissioner may waive the requirements of the community shortage area grant if the shortage area is economically distressed and the medical needs cannot be

met without the waiver;
—physicians eligible under this program may receive an initial grant up to $5,000 and a grant up to $5,000 a year for the second and third year of medical practice in the shortage area. A registered nurse eligible for this grant may receive an initial grant up to $5,000 and a grant up to $5,000 a year for the second and third years of practice in the shortage area;
—provides that the state board of health is to adopt rules to carry out this law and the state board of health is to file an annual report to the legislature and the governor identifying the use of funds, the identification of shortage areas and more;
—provides that the Indiana Medical and Nursing Grant Fund is to be funded through state appropriations, gifts, and repayments by loan recipients from the Indiana Medical and Nursing Distribution Loan fund;
—repeals the Indiana Medical and Nursing Distribution Loan fund except for rights or liabilities accrued, etc.
This Act takes effect July 1, 1987.

● SEA 234 — amends the law concerning higher education and the use of cadavers in health education programs. This act abolishes the state anatomical board and establishes the Anatomical Education Program. The Dean of the Indiana University School of Medicine or the dean's designee shall oversee this program which provides for: 1) acquisition of cadavers for educational purposes; 2) distribution of the cadavers to insitutions of higher learning; 3) utilization of the cadavers for educational purposes; and 4) final disposition of the cadavers.
This Act takes effect July 1, 1987.

Mental Health

● HEA 1355 — authorizes the disclosure of information concerning a patient's mental illness to a law enforcement agency if the patient escapes from a mental health facility and the superintendent of that facility determines that failure to provide the information may result in harm to the patient or another person;
—authorizes such disclosure to a coroner or medical examiner in the performance of their duties;
—authorizes such disclosure to a school in which the patient is enrolled if the information will assist the school in meeting the patient's educational needs;
—allows for the consent for the release of a deceased patient's mental health records to be given by a personal representative, spouse, or responsible family member;
—permits a court to place an individual subject to involuntary commitment proceedings in an outpatient program if certain conditions are met.
This Act takes effect September 1, 1987.

● HEA 1867 — establishes a definition for a mental health service provider;
—provides that a mental health service provider is immune from civil liability to persons other than the patient for failing to predict or warn, or take precautions to protect someone from a patient's violent behavior unless the patient has communicated an actual threat of physical violence or harm against an identifiable victim(s), or evidences conduct indicating an imminent danger that the patient will use violence to cause harm to others;
—provides that the duty to take reasonable precautions is discharged when the mental health service provider takes one or more actions to attempt to communicate the threat to the victim, t notify law enforcement, to seek civil commitment of the patient and to take steps reasonably available to the provider to prever the patient from using physical violence until the law enforcemer agency can be summoned and takes custody of the patient;
—provides that a mental health service provider who discloses in formation to comply with the duty to warn or take reasonab precautions is immune from civil and criminal liability regardin patient confidentiality.
This Act takes effect September 1, 1987.

● SEA 315 — provides that a mentally ill patient may b discharged from a mental health facility before the end of the in dividual's commitment or court ordered therapy program if th superintendent of the facility, with the written consent of the at tending physician, determines that the patient will enter a facilit that provides more appropriate care immediately following the pa tient's discharge.
This Act takes effect September 1, 1987.

● SEA 423 — amends the law concerning mental health to per mit a court to conditionally defer proceedings concerning an in dividual accused of a crime or an infraction if mental illness is contributing factor; expands the definition of a gravely disabled in dividual who may be involuntarily committed in a psychiatric facili ty; provides that a petitioner in a commitment proceeding has th right to counsel and authorizes a court to order participation in a outpatient therapy program as an alternative to commitment.
This Act takes effect September 1, 1987.

Peer Review

● HEA 1702 — provides that a peer review committee/organi zation or person that in good faith and as a witness in some othe capacity furnishes records, information, or assistance to a pee review committee engaged in the evaluation of professional com petence/conduct or the evaluation of patient care is immune fron any civil action arising from the furnishing of the records, informa tion, or assistance (unless the person knowingly furnishes fals information);
—provides that peer review committees, the staff of the pee review committee and those persons who assist with the pee review committees are not liable for damages under state, federal or local law if the action of the peer review committee meets the standards specified under the federal Health Care Quality Improvement Act of 1986;
—provides that this immunity does not apply to damages relating to civil rights including the federal Civil Rights Act.
This Act takes effect upon passage (May, 1987).

Professional Liability

● HEA 1210 — adds health facilities under the Indiana Medical Malpractice Act;
—adds a corporation, partnership, or professional corporation that as one of its functions provides health care, is organized or registered under state law and is eligible for coverage as a health care provider under the Indiana Medical Malpractice Act (coverage is limited to the health care functions);

-establishes the minimum annual aggregate insurance amount the health facilities with less than 100 beds at $300,000 and n more than 100 beds at $500,000;
-equires the insurance commissioner to adopt rules to establish teria for eligibility and the minimum annual aggregate insurance mount for the corporation, partnership, or professional corpora- not to exceed $500,000;
-rovides that health facility administrators may not be members the medical review panel.
s Act takes effect September 1, 1987.

● HEA 1218 — provides that all amounts appropriated by the 5 general assembly to the residual malpractice insurance inority along with interest revert to the state general fund.
s Act takes effect immediately.

● HEA 1445 — provides for immunity from civil liability for ctors for the negligent performance of their duties who work hout compensation for a not-for-profit corporation that has the pose of developing or providing hospital services, medical re- rch, or ambulance or emergency medical treatment services fective September 1, 1987);
-rovides for limited immunity for persons who volunteer their sonal services for a sports or leisure activity involving children der sixteen (16) years of age (excludes licensed health care viders) (effective June 1, 1987);
-rovides for immunity to persons contributing time and services the Pan American Games (effective upon its passage).
e remaining portions of the Act take effect September 1, 1987.

● HEA 1852 — adds psychiatric hospitals to the requirement der the Medical Malpractice law that an annual verified financial tement be submitted to demonstrate financial responsibility;
-ncreases the minimum surcharge from $5.00 to $25.00;
-ncreases the minimum balance in the Patient's Compensation nd for purposes of reducing the surcharge from $15 million to 0 million;
-llows the insurance commissioner to increase the surcharge to 0% with the surcharge set by a rule and based on actuarial udies and that the surcharge must be adequate for the payment claims and expenses;
-rovides that any termination of the policy by a cancellation in- ated by the insurance company or the insured is not effective as patients claiming against the insured covered by the policy less at least 30 days before the taking effect the cancellation of ritten notice has been received by the commissioner that ecifies the date the termination becomes effective;
-establishes that each complaint filed must include a filing fee of 5.00 and a processing fee of $2.00 for each additional defen- ant;
-rovides that for claims of less than $15,000, a medical liability surer of the health care provider against whom an action has en filed shall provide written notice to the commissioner within 0 days after the filing of the action and the final disposition of the ction;
-adds causes of action arising before September 1, 1987, in con- ection with an international amateur athletic event under the edical Malpractice statute (expires January 1, 1990).
his Act takes effect upon passage (May, 1987).

Public Welfare/Medicaid

● HEA 1297 — amends the law concerning public assistance to permit the disability determination division of the Indiana Rehabilitation Services Board to contract with the Federal Social Security Administration for the interim assistance agreement program.
This Act takes effect September 1, 1987.

● HEA 1767 — establishes a "managed care" provider program under Medicaid;
—defines a managed care provider as a physician primarily engaged in general practice, family practice, internal medicine, pediatric medicine, or obstetrics and gynecology and who has entered into a provider agreement with the department of public welfare;
—provides that a managed care provider may also be a partnership, corporation, or other entity that employs or contracts with these primary care physicians who has entered into a provider agreement with the department of public welfare;
—establishes that a provider who wishes to participate in the medical assistance program as a managed care provider must sign the provider agreement and in so doing that provider may not be excluded from participating in the Medicaid program;
—provides that physician services do not include the decision to admit a patient to a hospital;
—provides that Medicaid recipients must select a managed care provider to provide physician services from the geographic area in which the recipient resides (the department of public welfare shall furnish the Medicaid recipient with a list of managed care providers who have entered into a provider agreement);
—provides that those recipients who fail to select a managed care provider may be assigned one;
—provides that a recipient may not receive physician services other than from a managed care provider selected by the recipient except in an emergency, or upon the written referral of the managed care provider. A Medicaid recipient, however, may be admitted to a hospital for immediate medical treatment by a physician other than the managed care provider. The admitting physician shall notify the recipient's managed care provider within 48 hours of admission. Payment for these services will be for only those services medically necessary and reasonable;
—provides that a Medicaid recipient may obtain eye care services except for surgical services from an optometrist or a physician eligible to provide care under Medicaid;
—provides that a Medicaid recipient may obtain foot care services from a podiatrist or a physician eligible to provide care under Medicaid;
—provides that a Medicaid recipient may receive psychiatric services from a physician eligible to provide care under Medicaid;
—provides that the Medicaid recipient may not select a new managed care provider for 12 months after selection/assignment of the managed care provider;
—requires the department of public welfare to seek before October 1, 1987, from the federal government a waiver to establish the managed care program.
The sections of this Act establishing the specifics of the managed care program take effect July 1, 1988.
The sections of the Act requiring the waiver from the federal government take effect June 1, 1987.

Tobacco

● HEA 1007 — establishes the Clean Indoor Air Law for public buildings;
—defines public buildings as an enclosed structure or the part of the enclosed structure that is occupied by any agency of state or local government, is used as a classroom building or is used as a public school, or is licensed as a hospital or health facility;
—establishes a Class C infraction for any person who smokes in a public building except in a designated smoking area;
—provides that the official in charge of a public building shall designate a nonsmoking area and may designate a smoking area in the building;
—provides that when smoking and nonsmoking areas are designated that the official in charge of the building may take reasonably necessary measures to accommodate smokers and nonsmokers;
—provides that in public buildings with a single room that any or all of the room may be reserved as a nonsmoking area;
—requires officials in charge of the public building to post conspicuous signs for designated nonsmoking areas and that they may ask persons who are smoking in violation of this law to refrain from smoking and remove those persons who fail to refrain from smoking after being asked to do so;
—allows the state board of health to adopt rules to restrict or prohibit smoking in public buildings where the close proximity of workers causes smoking to affect the health and comfort of nonsmoking employees. Also provides that the state board of health may waive these requirements if the waiver will not significantly affect the health and comfort of nonsmokers;
—provides that this state law does not prohibit a local government from adopting an ordinance more restrictive than this law.
This Act takes effect September 1, 1987

● HEA 1533 — increases the tax on cigarettes, cigarette papers, and wrappers;
—adds appropriations from the state general fund ($400,000) for the Woman, Infants, and Children program; $400,000 to the state board of health from the state general fund to provide supplementary funding for maternal child health services; $400,000 from the state general fund for the school age child care project fund; and $2,460,000 to the local health maintenance fund from the state general fund to distribute to local boards of health to provide basic health services;
—establishes a committee of the legislature to review the need to continue these appropriations in 1992;
—establishes a tax on the distribution of tobacco products in Indiana at the rate of 15% of the wholesale price of the tobacco products;
—establishes procedures for licensing of tobacco products distributors and penalty provisions for failure to comply with these provisions;
—provides that the funding to the local boards of health under the local health maintenance fund shall be granted based on a county population formula;
—establishes specific requirements for the school age child care project fund.
The section of this Act dealing with the increase in the cigarette tax, the general fund appropriations, and the tobacco products tax takes effect July 1, 1987.

● SEA 145 — amends the Indiana code to increase the minimum age for the sale of tobacco to minors from age 16 to age 18;
—defines tobacco as chewing tobacco, cigars, cigarettes, s that contains tobacco, and pipe tobacco;
—provides that a person who knowingly sells tobacco to a pe under age 18 commits a Class C infraction;
—provides that it is a defense that the accused person sol delivered the tobacco to a person who acted in the course of ploymen or a business of tobacco agriculture, process transporting, wholesaling, or retailing;
—establishes that a person may apply for an order enjoining violation of this chapter from the circuit court or a superior co the county where the violation occurs. The court may grant a junction restraining order and grant the costs and reasonabl torney's fees of the person bringing the action.
This Act takes effect September 1, 1987.

Wrongful Death/Wrongful Life

● HEA 1571 — prohibits a person from bringing a cause o tion or receiving an award of damages based on the claim that for the negligence of another he would have been aborted (wr ful life).
This Act takes effect September 1, 1987.

● SEA 2 — authorizes a parent, guardian, or pers representative to bring a civil action for the injury or death child and expands the damages recoverable;
—allows recovery for the loss of the child's love and compan ship and for the expenses for psychiatric and psychological co seling required as a result of the child's death (prior law allo only for the recovery of medical and burial expenses);
—provides that the trier of fact in a case involving the wron death of a child must make a separate finding with respec damages for the loss of the child's love and companionship (requirement expires November 1, 1992);
—limits the recovery for the loss of such damages to $100,00 actions accruing prior to November 1, 1990 (after such time th will be no limit on the amount recoverable for such damages
—provides that the jury in such a case may not be advised of $100,000 limit on recovery for the loss of the child's love companionship and requires the court to reduce that part of award to $100,000 if a larger amount is awarded by the jury
This Act took effect May 8, 1987.

Other

● HEA 1012 — amends the Indiana Code concern Alzheimer's disease and related senile dementia programs; quires the department of aging and community services to deve training programs for persons who care for persons w Alzheimer's disease or related senile dementia; requires department to establish pilot programs for the provision of resp care and other supportive services for Alzheimer's disease a related senile dementia patients and their families; provides that department may award grants to be used for Alzheimer's dise or related senile dementia activities; requires the department submit to the general assembly, before November 1 of each ye a report on services provided and research conducted with gr

; establishes the Alzheimer's Disease and Related Senile ntia Task Force. The task force shall assist the department in ng out its duties and conduct research. The task force ex- December 31, 1990.
Act takes effect upon passage (May, 1987).
HEA 1076 — mandates that the attending physician or the tal administrator or the hospital administrator's designee report to the state fire marshal any patient who is treated for: second or third degree burn to ten percent (10%) or more of ody; 2) any burn to the upper respiratory tract or laryngeal a due to the inhalation of superheated air; or 3) a burn that s in serious bodily injury. If the second or third degree burn s less than 10% of the body, the attending physician may t it. There is no penalty for failure to report in either case.
Act takes effect September 1, 1987.
HEA 1176 — provides that communications between a victim rtain sexual and battery related crimes and a counselor are eged and specifies that such counselors still have a legal duty ort suspected cases of abuse, neglect, battery, or exploita- of children or endangered adults;
uires that the counselor's treatment must be for any emo- or psychological condition resulting from the sexual or bat- elated crime.
Act takes effect September 1, 1987.
HEA 1407 — requires the department of veteran's affairs to ct a study of the birth defect records of the state board of to determine whether the incidence of birth defects in chil- of Viet Nam veterans who were exposed to chemical defoli- r herbicides is greater than the incidence of birth defects in pulation as a whole; provides that the department shall com- the study and report its findings and conclusions to the al assembly before June 30, 1990.
Act takes effect July 1, 1987.
Act expires December 31, 1990.
HEA 1623 — provides that the bureau of motor vehicles may a parking placard to a person who is certified by a physician severly and permanently restricted in mobility, by a pulmon- cardiovascular disability, by an arthritic condition, or by an pedic/neurological impairment, or who is certified by an op- rist or opthalmologist to be blind or visually impaired.
section takes effect January 1, 1988.
HEA 1779 — establishes the Disability Medical Panel con- g of three voting members who must be physicians and ;
vides that the panel shall make recommendations to deter- the degree of impairment of an officer determined to be dis- and whether the disability arose during the line of duty;
uires the panel to establish impairment standards;
uires the panel to adopt rules as required under this act e January 1, 1988.
ection of the Act dealing with the appointment of this panel bers takes effect upon passage (May, 1987). The remainder Act takes effect July 1, 1987.
SEA 6 — allows a person to be certified as handicapped for ses of obtaining a handicapped parking permit by: 1) a cian having an unlimited license to practice medicine; 2) a cian who is a commissioned medical officer of the armed s of the United States or of the United States Public Health ce; 3) a physician who is a medical officer of the Veterans nistration of the United States; 4) a licensed chiropractor; or censed podiatrist. Also under this act, if a person's disability is not permanent, a new physician certification is not required upon expiration of the placard, only reapplication.
This Act takes effect September 1, 1987.

- SEA 18 — abolishes the Indiana Judicial Study Commission as of December 31, 1987, and establishes the Commission on Trial Courts to examine and develop proposals for the reform of the Indiana trial court system and to submit its findings to the General Assembly before October 31, 1988.

This Act takes effect July 1, 1987.

- SEA 84 — makes numerous changes in the law concerning administrative adjudications by state agencies;

—provides that a state agency, if it has a quorum of its members present, may take official action by an affirmative vote of a majority of its members present and voting if another statute does not specify otherwise;
—lessens that standard by which a person's rights must be affected in order to petition for judicial review of an agency's action.
This Act takes effect July 1, 1987.

- SEA 235 — amends the law concerning addiction services by making the division of addiction services (rather than the addiction services advisory council) the sole authority authorized to: 1) disburse any grants, loans, or gifts made by the federal government or any other source to the state, its agencies, and its subdivisions; 2) review and approve any grants or contracts made by the federal government to or with any local governmental unit, or any other public or private agency; or 3) disburse any money appropriated to the addiction services advisory council or the division. This Act does not affect any rights or liabilities accrued, or proceedings begun before the effective date of this Act.

This Act takes effect July 1, 1987.

- SEA 282 — changes the name of the Indiana Department on Aging and Community Services to the Department of Human Services;

—replaces the Rehabilitation Services Board, the State Housing Board, and the Commission on Aging and the Aged with new advisory commissions within the new department and repeals the current law concerning those bodies;
—establishes an Adult Protective Services Unit to investigate reports of neglect, battery, or exploitation of endangered adults and to assist in obtaining protective services for those persons;
—mandates the new department to develop new training programs in the care of persons with Alzheimer's disease or a related senile dementia and establishes a task force to carry out those duties.
This Act takes effect September 1, 1987.

Vetos

BILLS VETOED

- One proposal during this session of the Indiana General Assembly was vetoed by Governor Robert D. Orr.
- SB 375, known as the prejudgment interest bill, provided that prejudgment interest (interest on the amount of a judgment that is calculated for a period preceding the date that the court returns a verdict) may be awarded in a civil action of tortious conduct. Even though the Patient's Compensation Fund was excluded from this proposal, the prejudgment interest may have accrued 180 days after a medical review panel was formed (not to exceed 48 months).
- SB 375 is eligible for a veto-override during the 1988 session of the Indiana General Assembly.

Legislative Morgue

Many proposals introduced in each legislative session fail to be passed into law. Some measures are defeated with a vote while other measures are never even brought to consideration in a committee. Several of these bills which were unsuccessful this session were from the health/medical area. These proposals, many of which were not supported by the ISMA, are now resting in the Legislative Morgue. Below is a brief summary of some of these bills:

SB 333 — would have mandated coverage of spinal manipulations by third party payors;
SB 393 — would have changed the statute of limitations in malpractice claims from two years from the date of occurrence to two years from the date of discovery;
SB 475 — would establish a state hospital cost containment commission;
SB 494 — would license marriage and family counselors;
HB 1075 — would license two classes of social workers;
HB 1083 — would have removed the mandatory seat belt law;
HB 1139 — would require a health care provider to report the names of pregnant minors to the local law enforcement agency;
HB 1299 — would have restricted the physician's ability to dispense medications from the office;
HB 1596 — would require a pre-marital AIDS antibody test;
HB 1802 — would have established a Triplicate Prescription Program for Schedule II drugs;
HB 1846 — would require physicians to report to the local welfare department the names of infants with life threatening conditions.



THE INDIANA MEDICAL FOUNDATION, INC.

3935 North Meridian Street

Indianapolis 46208

A foundation for charitable, educational, and scientific purposes, organized by the ISMA as an endowment fund to support the educational mission of the Association and INDIANA MEDICINE.

Bequests, legacies, devises, transfers or gifts to the Foundation or for its use are deductible for federal estate and gift tax purposes, in accordance with the Internal Revenue Code.

The Foundation is managed by a board of directors that comprises the members of the ISMA Executive Committee. At present, proceeds from the Foundation investments are awarded to INDIANA MEDICINE to further the continuing medical education program.

Memorial contributions made to the Foundation in lieu of flowers will be acknowledged by the secretary in a letter to the family of the deceased.

"for religious, charitable, scientific, literary or educational purposes"

Resident Physician Essay Contest

During the 1987-88 resident training year the Resident Medical Society of the ISMA and INDIANA MEDICINE will conduct a medical essay contest. All members of the Resident Medical Society are eligible to enter. Each author may choose the subject. Essays (medical articles) will be limited in length to 10 pages of typescript, properly margined and double spaced. Illustrations are encouraged and are to be included in the space limitation. Each article submitted should not have been published previously and should be credited to one author only.

Entries should be mailed to INDIANA MEDICINE, 3935 N. Meridian St., Indianapolis 46208, and be postmarked prior to Jan. 1, 1988.

Judges will consist of two specialists within the field of the article, three medical education directors from Indiana institutions with approved residency training programs, and one member of the INDIANA MEDICINE Editorial Board.

Authors of the articles judged to be the four best will receive prizes of $100 each, and an additional $100 prize will be given to the best article of the four.

All prize-winning articles will be published in INDIANA MEDICINE. It is hoped that space will allow the publication of other entries to be chosen in the order of their numerical scores.

Essays will be judged on the following criteria:

SCIENTIFIC MERIT: Research methods, data analysis, subject or patient population selection, control of variables, literature analysis.

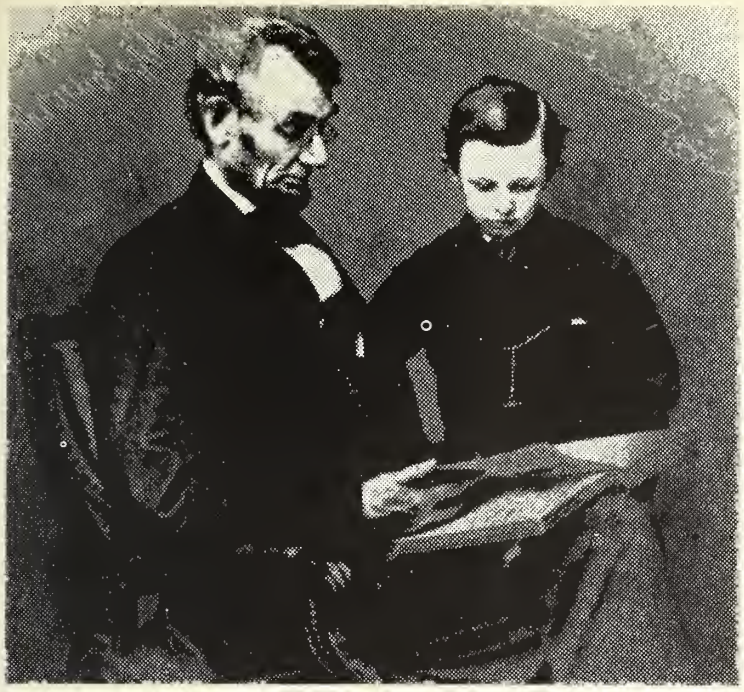
APPLICABILITY: Usefulness of results to private practitioner, academician, researcher.

CONTENT: Depth of analysis, continuity of discussion supporting the main thesis, feasibility of conclusions.

INNOVATION: Uniqueness of idea, creativity, improvement of existing techniques, previously undiscovered data, advancement of basic understanding.

Each essay will be assigned a numerical score for each of the four judging criteria by each judge as follows:

0 Unacceptable	3 Good
1 Poor	4 Above average
2 Fair	5 Excellent



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'BE ALL YOU CAN BE!'

Physicians Respond to the Army's Challenge

BOB LONSBERRY
Indianapolis

BEING A PHYSICIAN imposes a special set of responsibilities on an individual; so does being an Army officer. At one of Indiana's smallest accredited hospitals, a group of seven doctors does both.

Hawley Army Community Hospital, at Fort Benjamin Harrison in suburban northeast Indianapolis, is a 20-bed hospital and outpatient clinic that is designed to provide primary health care for area servicemembers, their families and military retirees. The Army doctors on its staff play a pivotal part in accomplishing that mission. Their duties and unique status as soldiers set them apart from civilian doctors and serve to illustrate the role of Army physicians worldwide.

All Army physicians serve as commissioned officers, with the majority of medical school graduates automatically receiving the rank of captain. At Hawley, most of the military doctors entered the service through the Army's Health Professionals Scholarship Program, trading a year of active-duty service for every year of Army-supplied medical school tuition and stipend. Most participating physicians incur a four-year service obligation. Having Uncle Sam pay the bills is the Army's biggest draw for young doctors who answer the Army's call of "Be All You Can Be!"



"Courtesy and 'We Care' Is a Way of Life for Us. Everybody Has Bad Days, But When It Comes to Dealing with Patients, We Always Have To Be at Our Sunday Best . . ."

—Lt. Colonel Rosa Stith
Hospital Commander

"I came in the Army, essentially, to finance my medical education," said Capt. Stephan Zentner, a Loyola med school graduate.

"It was the best way open to me to pay for school and not have money problems hanging over my head while I was trying to study," Zentner added. His feelings are echoed by Capt. Lou Irwin, a Virginia Medical College graduate in his second year in uniform.

"Tuition was covered, books were covered, fees were covered and there was the monthly stipend which took a lot of the burden off financially. I think money is 90% of the battle in school. The Army took care of that and I have to say, overall, it was a good deal financially," Irwin said. His wife, Capt. Jan Spitzer, is also a Virginia alumna and physician stationed at Hawley.

The Army encourages young doctors to specialize and many of its physicians go on to residencies at military or civilian teaching hospitals. The Hawley military staff includes one internist, five family practitioners and just one general medical officer—the Army name for general practitioner. Irwin, for example, served a three-year family practice residency at DeWitt Army Hospital at Fort Belvoir, Va. A residency, by the way, that he described as "as good as I could have gotten anywhere." Zentner, also a family practitioner, gained his specialty at a civilian hospital in Lansing, Mich.

Having a board-certified specialty also earns Army doctors a $2,000 bonus annually. Even counting the bonus and an annual salary that averages around $25,000 for first-term Army doctors, the comparison between civilian and

Mr. Lonsberry is news editor of the *Harrison Post*, a weekly newspaper published at Ft. Benjamin Harrison, Indianapolis. He previously spent three years as a reporter for a small daily newspaper in New York. He holds a B.A. degree in American History from Northern Arizona University and is a graduate of the Dept. of Defense Information School.

military income is hard to determine. As soldiers, Army physicians receive tax-free allowances for food and housing, free medical and dental care, and have access to reduced-price shopping at Army commissaries and exchanges. In addition, they cannot be directly sued and, consequently, don't have to pay malpractice premiums. Neither do new Army doctors face the start-up costs associated with beginning a practice. Consequently, it is hard to put an absolute dollar amount on the net value of an Army doctor's compensation.

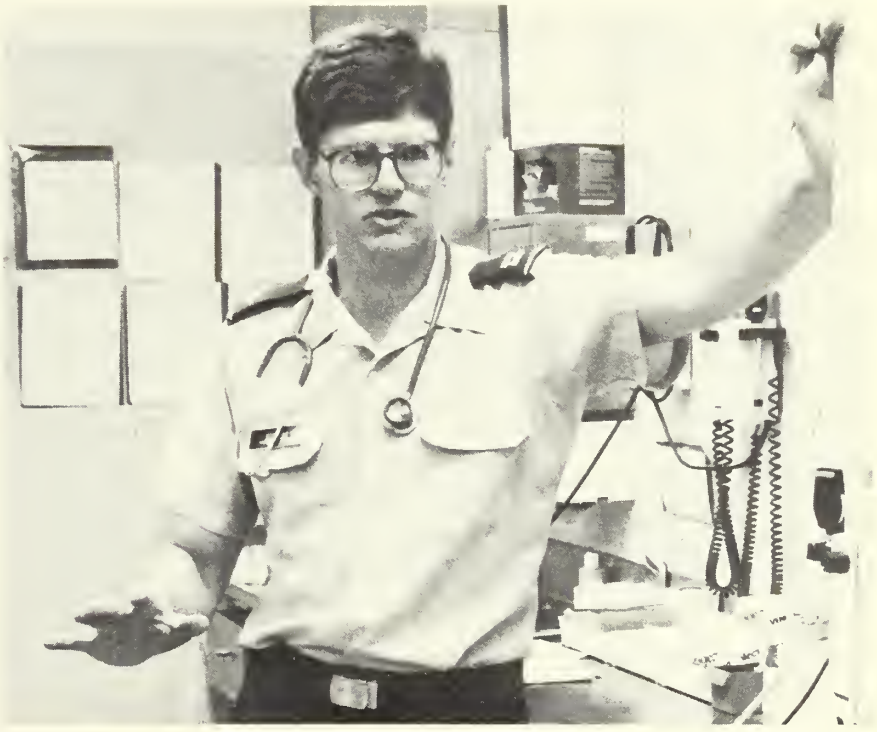
Generally speaking, young Army doctors earn wages competitive with those paid to their civilian counterparts. First-term Hawley doctors seem pleased with their pay. One described it as beyond his needs and expectations. As years pass, however, and physicians gain seniority, potential earnings in the civilian marketplace outstrip those usually available to soldiers. An Army physician with 20 years of service and the rank of colonel currently earns a base salary of less than $50,000 a year.

"When I think of why I am in the Army, money is not a motivating factor. It can't be," said Lt. Col. Rosa Stith, a 12-year Army veteran and the Hawley hospital commander. As the chief administrator and top physician at the hospital, Stith's annual base pay, according to published wage scales, is about $35,000.

Stith said the opportunity to move into administrative positions and a personal comfort with the stability of the military system are two factors helping to keep senior Army doctors in uniform. Another incentive is the security of Army retirement benefits, which are available after 20 years of service. Even so, as many as 80% of first-term Army physicians do not serve beyond their period of initial commitment.

Though retirement ends the career physician's association with the Army, practically all doctors begin their active-duty service by attending a two-month "officer basic course" immediately after their residency. The schooling is entirely military and teaches the doctors Army customs and courtesies, how to wear uniforms and how to work within the Army rank structure. Also included is field training, which gives the young officers skills needed to survive and function in combat. Soldier training involves putting on combat boots and camouflage fatigues, picking up an M-16 rifle and learning how to fight.

Some physicians continue soldier training throughout their Army career, depending on their assignment. That can include annual marksmanship qualification and soldier skills testing. Career Army physicians also attend the soldier schools required of all senior officers.



"I Think Money is 90% of the Battle in (Medical) School. The Army Took Care of That and I Have to Say, Overall, It Was a Good Deal Financially . . ."

—Captain Lou Irwin
Army Family Physician

After the officer basic course, most new doctors are assigned to patient care positions at Army hospitals or troop clinics. The size of the facilities can vary greatly, from the huge Walter Reed Army Medical Center near Washington, D.C., to smaller facilities such as Hawley.

Hawley hospital—named for Maj. Gen. Paul Hawley, a career Army physician and the chief surgeon of the European theater in World War II—has a staff of about 130 soldiers and 115 civilians. Four civilian physicians are employed, as are a nurse practitioner and a physician's assistant; another group of civilian doctors contracts to provide in-house coverage on nights and weekends. The nursing staff is composed of 10 Army registered



HAWLEY ARMY COMMUNITY HOSPITAL

nurses, seven civilian RNs and eight Army licensed practical nurses.

In the average month Hawley sees approximately 9,000 patients in clinics ranging from radiology and physical therapy to mental health and optometry. The hospital also has a credibly stocked pharmacy and fully accredited laboratory. Hawley is smaller than many other Army hospitals because of the ready availability of quality civilian medical care in the Indianapolis area.

Today's Army Is Emphasizing Considerate Patient Care and Quality Medical Attention

Hawley hospital, like all Army health care facilities, is a working example of socialized medicine. Commenting on that, one doctor said, "We do very well, but in any type of socialized medicine it is easy to become ... overwhelmed with qualified recipients." A vast number of past and present servicemembers and their family members can claim free care at the hospital. That care runs the gamut from free bottles of aspirin to major surgery and helps create the hospital's huge patient load.

The size of an Army hospital and a doctor's assignment in it can do much to determine how much physicians can do to maintain proficiency and broaden their skill base. Major hospitals at large Army forts are very similar to civilian hospitals in metropolitan areas and offer their doctors much in the way of professional development. Smaller hospitals can, because of limited services, appear stifling for physicians. For a variety of reasons, Fort Harrison's Hawley hospital falls closer to the latter category.

Because of the transient nature of its clientele and staff limitations, most patients treated at Hawley do not have appointments. They come randomly through the hospital's acute care clinic—a scaled-down emergency room—or through "sick call," an early-morning rush of patients that one doctor called "McDonald's medicine." Most people at the hospital recognize that the system taxes doctors and the soldiers who support them, but it is also readily acknowledged that it allows quality health care to be provided efficiently to a large number of patients.

At 6:30 a.m. every weekday, dozens of young soldiers attending schools at Fort Harrison filter into the Hawley family practice clinic for sick call. In a clinic-like environment, they are processed and their records are deposited outside a doctor's door. Generally, one Army doctor and a civilian physician carry the sick call patient load. According to Sgt. 1st Class Charles Volmer, an enlisted soldier in charge of the clinic, the two doctors usually treat between 50 and 75 patients a morning. The doctors then go on to see other patients through the day. One Hawley physician estimated his daily average at 40 patients, with busy days totaling 60 to 65 patients. Response to the patient volume varies.

"I feel pretty comfortable with the work load," Capt. Zentner said, "Sometimes I don't feel that I'm giving as good care as I want to, but I'm confident that the patients are being treated well. I have learned to be more efficient and to be more responsible. I consider it a good learning situation."

Another Army physician said the pace of sick call limited his time with patients and made him little more than a gate keeper. "In training, we were taught to do as much as possible and then refer the patient. But it's a different story here. If it looks like sooner or later the patient will need to see a

specialist, we opt for sooner," he said.

Most specialty care at Hawley is provided by civilian doctors who contract with either the Army or CHAMPUS—the military's medical insurance organization. Patients are also referred to the Indianapolis Veterans Administration hospital or to larger military hospitals at Fort Knox, Ky. and Wright-Patterson Air Force Base near Dayton, Ohio.

Though the assembly-line pace of morning sick call and its subsequent referral to specialists is irksome to some, it is efficient and successful, according to most involved—most notably the hospital commander.

"Sick call is basically a triage, and that's the way it should be looked at. We look at minor complaints, resolve them and get the soldier back to duty. That is our mission. If the complaint is more serious, then we get the soldier the specialized care he or she needs," Col. Stith said.

In spite of the heavy patient load, Army doctors at Hawley do not work unusually long hours. The normal duty day is from 7:30 a.m. to 4:30 p.m., Monday through Friday. Physicians alternate coming in an hour early to cover the start of sick call, and between four and six times a month Army doctors serve as the "medical officer of the day." As such they work in the acute care clinic from 7 a.m. to 5 p.m. and are on call through the night in case the civilian doctor on duty needs help.

Army family practitioners can have some of their skills lie fallow at Hawley. The hospital does not offer obstetric services and the pediatric clinic is staffed by civilian physicians. Consequently, the triad of family practice—obstetrics, pediatrics and internal medicine—is not offered to all physicians. Also, because Hawley's ward is so small, doctors do not often become involved in making rounds or following a patient personally through the inpatient process.

Stith, a family practitioner and former chief of family medicine at a large hospital in Fort Polk, La., recognizes that getting rusty is a threat to all doctors, and said the Army works hard to keep physicians proficient. But she said the situation at Hawley is beneficial to patients, and that is the Army's prime consideration.



Hawley physicians treat an average of 40 patients each day.

"The idea is that if we put family practitioners into these clinics which have previously been staffed by (general practitioners), we are going to improve the level of patient care, and that will always be our number one priority," Stith said.

Mobility within the Army system of hospitals also helps to prevent physicians from losing their skills. Two family practitioners currently stationed at Hawley are being transferred to a larger Army hospital to teach in a residency program. At least one Hawley doctor works part time at a civilian hospital to diversify his practice. In addition, the regular routine of journals, conferences and continuing education is encouraged for all Army doctors. Stith herself continues to see patients in order to keep her skills sharp.

Army medicine, like its counterparts in all the armed forces, has traditionally had a bad public image. It has been seen as slow, bureaucratic, impersonal and occasionally incompetent. The reasons for that reputation are varied, some are valid and some are trivial. Some may have to do with the arena in which Army medicine performs and the conditions under which it operates.

"I don't think the Army makes any more mistakes, but I think the Army's mistakes are more visible, they are laid wide open for public scrutiny," Col. Stith declared. Another hospital staffer said, "When there are problems at a civilian hospital, people complain to the hospital administration. When the problem is with Army medicine, people write their congressman."

But the Army is trying to make a break with its health care problems of the past and has placed a heavy emphasis on providing considerate patient care and quality medical attention.

"If you are in the field of medicine, you should be in the 'We Care' business," Hawley commander Stith said, "Courtesy and 'We Care' is a way of life for us. Everybody has bad days, but when it comes to dealing with patients, we always have to be at our Sunday best."

The Army-wide push for courteous patient care is a visible theme at Hawley. Posters of a teddy bear mascot with the slogan "The Hawley Bear Cares" are on every wall and the logo appears on standard forms, pamphlets and in most hospital bulletins. The hospital has an ombudsman-type patient representative whose name is posted in clinics and treatment areas. The attitude of service is emphasized at all levels. One enlisted soldier who processes sick call patients said, "If you forget that the patients are individuals, then you're not treating them right. You've got to remember to treat patients just like you would want to be treated."

Army Doctors, Like All Soldiers, Must Accept The Fact They May One Day Face Combat Duty

But polite treatment of patients is only window dressing on a larger Army effort to ensure quality health care for patients. Two major checks have been instituted over the past couple of years to make sure Army physicians are as competent and qualified as their civilian counterparts.

A process of stringent credentialing is now imposed on all new and transferring Army physicians. All schooling, certifications and professional memberships are verified periodically to make sure Army doctors are who and what they claim to be. In addition, uniformed physicians are now required to be state certified. Because of frequent transfers, certification is not required for the state in which an Army physician practices, but must be kept current in some state. Previously, military doctors were not required to be licensed and that fact did little to build faith in the system. The Army is also moving to have all patients assigned permanent physicians, instead of seeing whichever doctor is available. Staffing shortages have prevented the plan from being successfully implemented at Hawley.

Patient satisfaction is hard to measure, especially in the Army where it is almost traditional to criticize health care. But in a random sampling of career soldiers receiving treatment at Hawley, none complained about anything more serious than long waits. Most expressed general satisfaction with the care they and their families had received from the Army and none said they had ever formally complained about the quality of treatment.

Another significant difference between Army and civilian physicians is the type of worker providing them with support, including everything from nursing services to x-ray and laboratory testing. At Army hospitals like Hawley, most of those services are provided by soldiers, many of them young enlisted personnel with what would seem to be less education and experience than similar civilian workers.

"Overall, it's pretty good, really," Capt. Zentner said of the quality of support personnel.

"All the corpsmen get extensive Army training in their specific responsibility. This place runs as well as the hospital I did my residency in, as far as the capability of support is concerned," he added.

All registered nurses serve as commissioned officers while LPNs are drawn from the senior enlisted ranks, according to Lt. Col. Gretchen Hoagland, Hawley's director of nursing.

Hoagland, who is herself an RN with experience treating battle casualties, said the Army's system of training combat medics makes some of the physician-support personnel more independent and capable.

"I see a lot of talent (in our combat medics, who perform routine hospital duties.) The Army has expanded their training and in battle they will be on the scene managing patients until they can be evacuated. That makes for an independence in the caring for trauma that I don't believe is seen in the civilian world," Hoagland said.

She added that because many of the Army's LPNs are also noncommissioned officers (sergeants) with responsibilities supervising younger soldiers, they tend to have more managerial skills than their civilian counterparts.

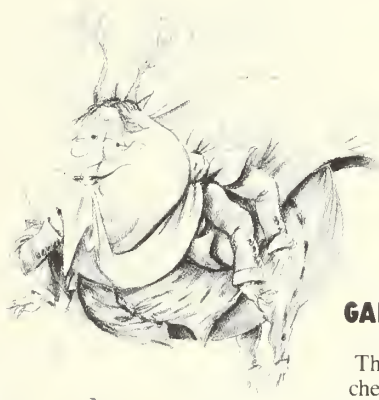
The final and greatest difference between Army physicians and their civilian colleagues lies in the basic nature of soldiering, that commitment to uniformed service that requires complete devotion to duty, even at the risk of life and limb.

Army doctors, like all soldiers, live with the knowledge that their duty may take them to combat and the risks that entails. As one Hawley doctor said, "You know that you may have to pay with your life. That is something you have to accept if you are going to be an Army physician."

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BOOK REVIEWS

MANAGING HYPERTENSION, by James V. Warren, M.D., and Genell J. Subak-Sharpe. Copyright 1986, Doubleday, Garden City, N.Y. 179 pages, hardcover, $14.95. *(Reviewed by W. D. Snively, Jr., M.D., Evansville)*

Managing Hypertension, written primarily for hypertensive laymen, is most appropriately dedicated to Dr. Irvine Page, who is the chief pioneer in achieving successful management of this ubiquitous ailment. Indeed, the book presents the antihypertensive program developed by the Cleveland Clinic, where Dr. Page served for so many years. The senior author, a past president of the American Heart Association, is Professor of Medicine at Ohio State's College of Medicine.

The book presents, in an attractive, easily readable style, every phase of the Cleveland Clinic's renowned program. Thus, it defines the problem of hypertension, tells who is prone to acquire it, covers in considerable detail risk factors, such as overweight, excessive sodium intake, cigarette smoking, and inactivity.

It presents the various levels of treatment, beginning with the nondrug therapy, then describing the various types of agents that are proving effective in controlling hypertension. The chapter on drug treatment presents an excellent summary of the significant hypertensive agents, which really date back only to about 1944.



"He just THOUGHT he had an offer I couldn't turn down."

The authors properly advise that the therapy story is far from over, that new hypertensive agents are undoubtedly waiting in the wings. Interestingly, the book apparently went to press before the introduction of a sustained-release calcium channel blocker.

This reviewer is convinced that the manual would be of great use to every hypertensive patient, as well as constituting a great aid to the physician supervising the patient. The manual is most timely and, indeed, long overdue. Godspeed to it! The book is attractively bound with a hard cover. It has a helpful glossary and is indexed.

DIMENSIONS IN GRIEF: ADJUSTING TO THE DEATH OF A SPOUSE, by Stephen R. Shuchter. Copyright 1986, Jossey-Bass, Inc., 433 California St., San Francisco 94104. 360 pages, hardcover. *(Reviewed by Alvin J. Haley, M.D., Indianapolis)*

This is a book about human grief; it is based on a study of 70 people (21 men and 49 women) who were followed after their spouse's death through the fifth year of bereavement. The intended audience for the book is the health and human service practitioners likely to work with bereaved and, in a broader sense, all those who wish to gain deeper understanding of human grief, especially the bereaved and their families.

The author states the purposes of the book are to establish a scheme for conceptualizing the dimensions of spousal bereavement, to bring such schemes to life through use of clinical vignettes, to convey the variability of human responses to human bereavement, and to present a systematic method of assessing the need for treatment and specific therapeutic strategies for spousal bereavement.

Spousal bereavement is presumably the most disturbing and disruptive event possible to an individual's life. The data of this book are derived primarily from a study by the San Diego Widowhood Project. Questionnaires and semi-structured interviews were used.

Chapters include: understanding bereavement, responses to loss of a spouse, coping with emotional pain, continuing ties to the deceased spouse, effects of bereavement on important aspects of life, changed relationships, identity evolution, and, finally, working therapeutically with the bereaved.

The chapter on Evolution of Identity describes the societal aspects of widowhood and describes how being single is different from being widowed and single. Perceptions of being single and reorientating to the single self, changing roles within the family, the loss of a "mirror"—all are described. This chapter goes on to describe changes in personal qualities including negative self-images produced by spousal death and bereavement as well as positive self-images and growth which may occur following the event. Bereaved spouse changes his/her view of the world; frequently there is a loss of direction following death which is followed by evolution of new beliefs and the establishment of different goals and directions for the new future.

The chapter for behavioral scientists and therapists describes the task of grief which should be accomplished and also describes dimension related interventions which the therapist may wish to use. Coping with mental and emotional changes are described including use of the therapist, catharsis, "dosing the pain," and other interventions, including integrating the continuing relationship with the dead spouse. The chapter goes on to describe methodology for maintaining health and treating dysfunction by addressing the stressors, depression and anxiety, alcoholism, etc. Altered relationships with the family and friends including romance and remarriage and sexual problems are described. The behaviorists may move to consolidate the evolving identity of the bereaved. Support groups for the bereaved are described. Finally, this chapter describes the therapeutic impact of the study on the 70 subjects.

In summary, this is an important book for behavioral scientists, and perhaps for all who have undergone

spousal bereavement. The greatest element of moving this book from indifference to excellence is the frequent use of clinical vignettes to illustrate items of the text.

EXISTENCE, CULTURE, AND PSYCHOTHERAPY, by Clinton R. Meek, Ph.D. Copyright 1986, Philosophical Library, Inc., 200 W. 57th St., New York, N.Y. 10019. 251 pages, hardcover, $19.95. *(Reviewed by Thomas J. Conway, M.D., Terre Haute)*

Existence, Culture, and Psychotherapy is a philosophic treatise. Its author, with a Ph.D. in Psychology, is experienced in teaching, research, and as a psychotherapist. He theorizes that language, which he calls the primary tool of culture, has disrupted the natural order of being. Thus we see reality in our society and its functions and we become unable to comprehend truth and true existence. If every author used language as does Dr. Meek in this book his thesis might be defensible.

Dr. Meek favors ontology, anthropology, ZEN, Tao, and epistomology (his "key to health and psychopathology"). He seldom mentions, and rarely uses, logic. In Chapter I he explains his preference for assumptions over conclusions thusly: "No statement in this book is to be construed as any more than provisional (an assumption). There is no true conclusion that can be made in language; thus the truth is always beyond words, . . ."

There follow eight other chapters replete with contradictions and conflicting definitions of basic terms and ideas. Thought, effort, concepts, necessity, language, reality, and structure are seen as unfortunate reactions of each culture which obscure "being" from humanity. The author states, "In fact, it is the rare person who recognizes the primary being and reality beyond conceptualization." This reader can only feel dismay that he and most other mortals must struggle within their societies and cultures while only the rare few can experience the existential. Just as frustrating seem the tasks of the psychotherapist and his patient as they try to remove the encrustacions of culture to leave only the sensitivity and experience of being.

Dr. Meek may have achieved the enlightened self understanding he espouses. But in identifying society, culture, and language as obstructions toward such peace, he forgets that only through those agencies has mankind developed the beautiful music, literature, religion, art—yes, even philosophy—the contemplation of which provides happiness for most of us.

Little, Brown and Company has released *More Than Just a Pretty Face: How Cosmetic Surgery Can Improve Your Looks and Your Life*. The author is a plastic surgeon, Thomas D. Rees, M.D., with Sylvia Simmons. Betty Furness is quoted concerning the book: "People who contemplate changing an essential part of 'self'—their face—have a right, and at last a way, to know precisely what is involved . . ." Dr. Joyce Brothers says: "Dr. Rees helps you to understand what surgery can do . . . and what it cannot do. Excellent reading." 272 pages, illustrated with line drawings, $19.95.

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Look-alike and sound-alike drug names can be misinterpreted by a nurse reading doctors' orders or by a pharmacist compounding physicians' prescriptions. Such misunderstandings can result in the administration of a drug not intended by the prescriber. Awareness of such look-alike and sound-alike drug names can reduce potential errors.

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	HYPERSTAT	**HYPER-TET**
Category:	Antihypertensive	Immune Serum
Brand Name:	Hyperstat IV, Schering Proglycem, Schering	Hyper-Tet, Cutter
Generic Name:	Diazoxide	Tetanus Immune Globulin
Dosage Forms:	Injection, Capsules, Oral Suspension	Injection



AUXILIARY REPORT

Anne Throop, Indianapolis
ISMA Auxiliary President 1987-88

A 10% increase in tri-level membership is the goal of the ISMA Auxiliary. We urge each physician to encourage his or her spouse to join and become involved in the auxiliary on the county, state and national levels. Membership dues are $15 for AMA Auxiliary, $8 for ISMA Auxiliary and each county sets its own dues. The money involved is a bargain when you think of the benefits offered.

The AMA Auxiliary promotes health education and services. Emphasis on the AMA Adolescent Health Initiative, a Tobacco Free Society, Child and Elder Abuse Prevention, AIDS Education for Youth, and continued Seatbelt Education and Support reflect the new and on-going projects calling for membership involvement.

The AMA Auxiliary provides publications to keep members and leaders up to date on current health, organization and legislative issues. FACETS magazine, for and about physicians' spouses, is sent six times a year to members as a benefit of national membership. The Direct Line Newsletter, a program resource, is sent six times a year to county and state auxiliary leaders. Horizons Newsletter is sent six times a year to resident physician and medical student spouses.

The AMA Auxiliary provides a vehicle for a unified voice in health and medical legislation through Legislative Alert Systems, Phone Banks to impact critical legislative concerns, Key Contact Systems and Project Medvote, which encourages physicians and their spouses to vote. Legislative updates on issues and bills, and educational materials for members come through the national Legislation Committee.

The AMA Auxiliary promotes members' personal development by offering educational seminars and leadership training at national meetings and workshops to prepare county and state auxiliary volunteers for community service. More than 1,250 auxiliary members participate each year in these AMA Auxiliary-sponsored programs.

Auxiliary Seeking 10% Growth in Membership in the Next 90 Days

The AMA Auxiliary also provides tangible benefits such as insurance programs at group rates and discounts on rental cars and hotel rooms.

"It's a fact: The AMA Auxiliary is a vast volunteer network that helps to bring a better qualify of life to all people through its publications, personal development opportunities, fundraising activities, health programs and projects, and legislative efforts. And if you cannot always remain an 'active' member, remain an informed member. Support the AMA Auxiliary with your dues."*

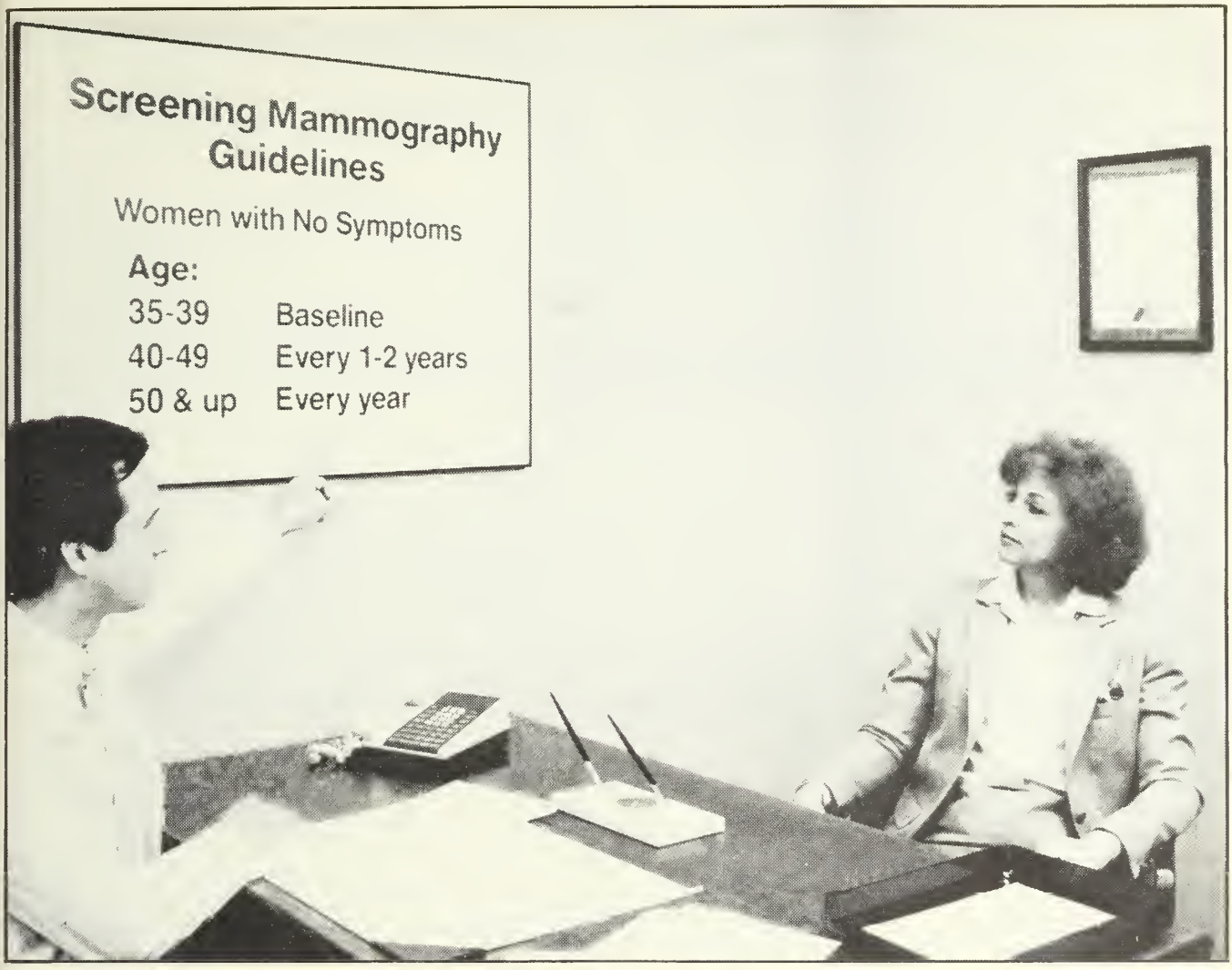
The ISMA Auxiliary serves as a conduit from the national organization to the county organizations. On May 14 we held a Membership Workshop in Indianapolis. The meeting was attended by 56 county and state officers and chairmen. Linda Nance of North Carolina, AMA Auxiliary Membership Chairman, was the keynote speaker. B.J. Whittaker, Ball State University, presented a working luncheon during which we focused on ways we could build and market a positive image for auxiliary in Indiana. The participants at the workshop returned to the 18 counties represented, highly motivated to implement an effective membership drive that will attract many members and get them involved as active participants in the county auxiliary programs.

Along with an overall effort to recruit and renew memberships in all counties, special emphasis will be focused on densely populated areas in which potential members are not reached because of the numbers involved.

The spouses of residents and medical students will be a focus for new membership involvement. Sheryn Ellis, Indianapolis, will co-ordinate efforts throughout the state to introduce these spouses to the benefits of auxiliary membership.

1987-88 will be a busy year as membership chairmen throughout Indiana concentrate on an intense membership drive that will take place before November 1, 1987. Our aim is to fulfill Anne Throop's goal of a 10% increase in the number of spouses who join all three levels of auxiliary membership: national, state, and county; and we want them to be actively involved as Advocates for Medicine.—**Lura Stone (Robert C.), Membership Chairman**

*From "It's A Fact" pamphlet, published by the AMA Auxiliary.



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The *Physicians' Directory* is the most ethical and professional method of announcing specialty practice. It is also the most effective medium for listing office location, office hours, and telephone number for the convenience of colleagues in referring patients.

The title of diplomate of a specialty examining board, a requirement for admission to the *Directory*, offers its assurance of qualifications, whether listed or not.

In addition to providing benefits to physicians, the *Directory* is a practical means of providing financial support for INDIANA MEDICINE.

All diplomates of the ISMA are invited to enter a professional card in the *Directory*.

CME QUIZ

TO OBTAIN ONE HOUR OF CATEGORY 1 AMA CME CREDIT, answer the following questions by circling the correct answer on the answer sheet below. Complete and clip the application form and mail it to: Indiana University School of Medicine, CME Division, BR 156, 1226 W. Michigan St., Indianapolis 46223.

Diabetic Ketoacidosis

CONTINUED FROM PAGES 719-725

1) A 39-year-old attorney with a 12-year history of IDDM has noted two days of worsening bronchitis as well as nausea and vomiting. On examination, his blood pressure is 140/62, pulse 112, respiration 28 per min. Urinalysis 4+ for glucose and strong for acetone, serum ketone positive 1:8, sodium 133, potassium 6.1, C02 8, chloride 98, BUN-54, creatinine 1.8.
   An immediate decision to begin insulin therapy for DKA can be based on:
   a) arterial pH of < 7.2;
   b) glucosuria and ketonuria in an IDDM;
   c) positive test for ketones in undiluted serum plus CO2 content of < meq/1;
   d) hyperglycemia with positive serum ketones in patient with IDDM
2) An increase in the BUN in this patient is due to:
   a) dehydration;
   b) permanent renal damage;
   c) dehydration, gluconeogenesis and pre-renal azotemoia;
   d) none of the above
3) Administration of bicarbonate in DKA is controversial. Problems with giving large amounts of bicarbonate include all the following except:
   a) late alkalosis;
   b) cerebral edema and CSF acidosis;
   c) resistance to insulin;
   d) shifting oxygen-dissociation curve to the left, possibly aggravating tissue hypoxia
4) Acidosis in DKA is due primarily to:
   a) increased lactic formation;
   b) increased rate of gluconeogenesis;
   c) increased lipolysis and ketogenesis;
   d) increased plasma concentrations of carbonic acid
5) Untreated DKA is commonly associated with:
   a) unmeasurable immunoreactive insulin levels;
   b) hyperventilation;
   c) increased sensitivity to peripheral effects of insulin;
   d) hyperchloremia
6) Dehydration (water loss) in severe uncontrolled DKA:
   a) results from an osmotic diuresis when large quantities of glucose are excreted in the urine;
   b) is unaffected by the presence of nausea and vomiting;
   c) is confined largely to the extracellular fluid space;
   d) usually is less than electrolyte loss
7) Serum potassium concentration in untreated DKA is usually:
   a) low to normal;
   b) does not accurately reflect losses of intracellular potassium;
   c) usually remains unchanged with insulin therapy;
   d) usually remains unchanged after sodium bicarbonate infusion
8) The patient admitted repeatedly to the hospital for episodes of diabetic ketoacidosis usually will:
   a) have marked insulin resistance as an underlying problem;
   b) have an underlying chronic infection;
   c) have emotional problems that cause neglect in the proper care of diabetes;
   d) be a male
9) Mortality from DKA is generally in the range of:
   a) 1%;
   b) 10%
   c) 20%;
   d) 30%
10) In a patient with DKA and coma, which of the following is most likely to contribute to obtundation?

CONTINUED ON PAGE 804

JULY CME QUIZ Answers

Following are the answers to the CME quiz that appeared in the July 1987 issue: "The Physician's Role in Family Adaptation to Important Life Events," by Morris Green, M.D.

1. a	6. c
2. b	7. c
3. d	8. c
4. c	9. c
5. c	10. b

Answer sheet for Quiz: (Diabetic Ketoacidosis)

1. a b c d	6. a b c d e	11. a b c d
2. a b c d	7. a b c d	12. a b c d e
3. a b c d	8. a b c d	13. a b c d
4. a b c d	9. a b c d	
5. a b c d	10. a b c d e	

I wish to apply for one hour of category 1 AMA Continuing Medical Education credit through the I.U. School of Medicine. I have read the article and answered the quiz on the answer sheet above. I understand that my answer sheet will be graded confidentially, at no cost to me, and that notification of my successful completion of the quiz (80% of the questions answered correctly) will be directed to me for my application for the Physician's Recognition Award of the American Medical Association. I also understand that if I do not answer 80% of the questions correctly, I will not be advised of my score but the answers will be published in the next issue of INDIANA MEDICINE.

Name (please print or type)

Address

Identification number (found above your name on mailing label)

Signature

To be eligible for this month's quiz, send your completed, signed application before Sept. 10, 1987 to the address appearing at the top of this page.

NEWS NOTES

ISMA Names New Field Rep for Southern Indiana Area

Janna Kosinski is ISMA's new field representative for southern Indiana.

She was previously a district representative for the American Cancer Society in Bloomington, project coordinator for the Indiana State Library, and a junior and high school Social Studies teacher. She has a Master's Degree in Education from Purdue University. Her Bachelor's Degree in Education is from Indiana University.

Janna is originally from Indianapolis.

New York Researchers Win $50,000 Innovation Award

Pfizer Hospital Products Group has presented its annual $50,000 Award for Innovation to Dr. Robert C. Baier and Eileen Hassett of the State University of New York at Buffalo.

The award, inaugurated last year, recognizes an individual or research team for excellence in medical device innovation and is intended to encourage further research in medical devices for managing and treating diseases.

New Challenge Test Detects Hidden Asthma

A person with a persistent, undiagnosed cough may actually be suffering from asthma. Asthma is often misdiagnosed because so many ailments mimic it.

Hoffmann-La Roche announces that Provocholine® (methacholine chloride) is now available to allergists and respiratory specialists to be used to detect hidden asthma.

The test is used to identify hyperresponsive airways. The patient is given Prevocholine via nebulizer, after which the forced expiratory volume in one second is measured. Measurements are taken between inhalations of graduated concentrations of Provocholine.

A 20% drop in lung function from baseline indicates bronchial hyperresponsivity. Most patients revert to normal pulmonary function within five minutes if a bronchodilating drug is administered, or within 15 to 25 minutes without bronchodilation.

Because of the possibility of a severe reaction to Provocholine, the challenge test should be performed only under the supervision of a physician trained in and thoroughly familiar with all aspects of the technique of Provocholine challenge, all contraindications, warnings and precautions, and the management of respiratory distress.

Boehringer Mannheim Corp. Opens New Research Center

The Boehringer Mannheim headquarters complex in Indianapolis has opened a new 90,000-square-foot, $20 million research center. Boehringer Mannheim is one of the world's two largest medical diagnostics companies, and is now especially interested in diabetes and cholesterol testing. It is recognized as a pioneer in the field of small analyzers for physicians.

INVOLUTION

Commentary

Involution is a common occurrence in people. As one fine psychiatrist in Indiana said, "By the age of 50, 50% of the population is involuting." The cause of involution is unknown and it may be difficult to define and understand.

It helps me to think of it as the opposite of evolution. In evolution there is a "turning out" or a getting bigger and more complex.

As the physician-poet, Oliver Wendell Holmes Sr., said in his famous poem, "The Chambered Nautilus," after looking at the logarithmic spiral of a sagittally opened shell:

"Build thee more stately mansions,
Oh my soul,
As the swift seasons roll!
Leave thy low-vaulted past!
Let each new temple, nobler than
the last, . . ."

Rather than "turning or rolling out," as in evolution, involution can be thought of as "turning in or spinning in" toward the pole. A negative logarithmic equation or perhaps a decay curve are other suggestions for looking at this process.—**Richard J. Noveroske, M.D., Newburgh**

Correction: In my commentary, "Communication Is Sharing" (May 1987, page 500) I said, "The next stem was 'mundus' that means 'gift.' That was wrong. I meant to say "munus" means "gift" or "service." "Mundus" means "world" in Latin, usually in a spatial sense.—**RJN**

CME Quiz

CONTINUED FROM PAGE 803

a) severe acidosis;
b) hyponatremia and hypo-osmolality;
c) hyperosmolality;
d) diminished brain blood flow due to reduced arterial PCO2;
e) hypoxia

11) Fluid administration during therapy for DKA often is associated with a fall in blood sugar. The mechanism of this effect includes:
a) increased sensitivity to insulin;
b) increased renal clearance of plasma glucose;
c) increased peripheral uptake of glucose;
d) decreased hepatic glucose production

12) About how many hours after initial treatment for DKA is hypoglycemia likely to occur?
a) 2 to 6 hours;
b) 6 to 12 hours;
c) 12 to 24 hours;
d) 24 to 36 hours;
e) 36 to 48 hours

13) In a patient with known IDDM, DKA is likely to be initiated by:
a) ingestion of large amounts of simple carbohydrates;
b) sudden development of a worsening insulin resistant state;
c) hypokalemia associated with diuretic therapy;
d) release of catabolic hormones (e.g., glucagon, catecholomines, etc.) during severe stress

For the Asking . . .

• **An informational article on AIDS** has been reprinted from the March 1987 issue of *Consultant* by Abbott Diagnostics Educational Services. The title is "Acquired Immune Deficiency Syndrome: Eleven Questions Most Frequently Asked by Physicians." The author is Paul A. Volberding, M.D., chief of the AIDS Activities Division, San Francisco General Hospital. Copies may be obtained from local Abbott Diagnostics representatives.

• **"What Collection Ratio Should Your Practice Have?"** is the title of a carefully researched analysis of collection problems in medical practice. It appears in the May 1987 issue of *The Physician's Advisory*. Single issues cost $15. The annual subscription rate is $120. Write P.O. Box 126, Bala Cynwyd, Pa. 19004.

• **"Lawn Care Chemicals: What Consumers Should Know"** is the title of a 36-page booklet published by the American Council on Science and Health. The bottom line is that such chemicals, when correctly used, pose no threat to health. The best proof is the continued good health of the greenskeeper and his helpers, and the same situation with employees of commercial lawn care outfits. Individual copies of the report cost $2, but there are reduced prices for 10 or more copies. Write the Council at 47 Maple St., Summit, N.J. 07901.

• **CDC AIDS Weekly**, a complete weekly report privately circulated, was originated in 1985 and now has attained a substantial circulation. Each issue averages 20 to 30 pages—more than 1200 pages annually. Free sample copies and subscription information are available from the Weekly, P.O. Box 5528, Atlanta, Ga. 30307.

• **A national list of qualified Registered Dietitians in Private Practice** has been compiled by the Consulting Nutritionists in Private Practice, a practice group of the American Dietetic Association. To obtain the list, available free of charge, send a business-size SASE to Aviva E. Croll, R.D., M.Ed., P.O. Box 41, Bloomingdale, Ill. 60108.

• **Lots of people would like to be tested for AIDS.** Most of them don't get tested because the result may become public property. Confidentiality is the ingredient that will encourage AIDS testing and help in limiting spread of the disease. CARE/CARD was devised by Dr. Michael Applebaum, a Chicago physician. Individuals who want to get tested for AIDS pay a fee to CARE/CARD, Inc. The company sends a special card to the applicant's physician who draws the blood specimen; when the test results arrive, the physician alters the card to indicate positive or negative. Thereafter, only those people to whom the testee shows the card and, of course, the physician, will know the result. The card carries the testee's name, birthdate, the type of test and the date the subscriber enrolled. The original card has two ends; one is red and says positive, the other is green and says negative. When the testing doctor receives the test result, he cuts off the card end that does not apply. Presumably, the social record of the cardholders in the future will determine how often the test should be repeated. Write or phone: CARE/CARD, Inc., P.O. Box 802500, Chicago 60680—(312) 939-3219.

• **"Asthma and Allergies in the Schools: The Importance of Cooperative Care"** is a 12-minute videotape just released by Fisons Corp., makers of preventive medications for asthma and allergies. The video's purpose is to raise awareness among parents, physicians and educators of the vital importance of communication and cooperation when dealing with asthmatic and allergic children. The videotape is available on free loan from Modern Talking Pictures, 5000 Park Street North, St. Petersburg, Fla. 33709—(813) 541-5763. Copies of special "M.A. Reports" (a newsletter), one for teachers and one for educators, are also available from the above address.

Send your news items and comments to the Editor, INDIANA MEDICINE, 3935 N. Meridian St., Indianapolis 46208.

Physician Recognition Awards

The following ISMA physicians are recent recipients of the AMA's Physician Recognition Award. This award is official documentation of Continuing Medical Education hours earned, and is acceptable proof in most states requiring CME in re-registration that the mandatory hours of CME have been accomplished.

Adair, William K., Muncie
Aldred, Allen W., Fort Wayne
Beeson, David B., Kokomo
Bulger, John W., South Bend
Deitch, Robert D., Carmel
Eble, John N., Indianapolis
Kennedy, David B., Indianapolis
Kubley, Rod S., Plymouth
La Salle, Robert M., Wabash
Mattox, Dean L., LaGrange
McGarvey, William K., Indianapolis
Mellinger, Michael O., LaGrange
Michl, Leon G., Madison
Morrison, George G., Lawrenceburg
Nicholas, Thomas D., Rockville
Warner, T. Max, Indianapolis
West, Paul D., Terre Haute

NEWS NOTES

Ronald McDonald Children's Charities Establishes Second $100,000 Award of Excellence

Ronald McDonald Children's Charities (RMCC) has established a $100,000 "Award of Excellence" for the individual who has contributed the most toward the well-being of children.

The new award is in addition to a similar prize instituted by RMCC last year to recognize the physician who has contributed the most to the advancement of children's health care. That 1986 award was given to Harvard University Professor Julius B. Richmond, M.D., "father" of the national Headstart program. This prize is advancing his efforts in the university's interdisciplinary Working Group on Early Life and Adolescence.

Each $100,000 Award of Excellence will be made to the individual to support the continued work of his or her program for children, according to Ken Barun, RMCC executive director.

Valle Vista Expands Services for Children

The CPC Valle Vista Hospital, Greenwood, is building a 12-bed expansion that will provide inpatient services for children age 5 through 12. The facility now provides psychiatric and chemical dependency hospital services for adults and adolescents.



"I had to let my nurse go. I needed another office employee to file government forms and couldn't afford both."

NIH Consensus Development Conference Announced

"Geriatric Assessment Methods for Clinical Decisionmaking" will be the subject of a Consensus Development Conference to be conducted by the National Institutes of Health Oct. 19-21 at the Masur Auditorium, Bethesda, Md.

For details and registration, write to Marti Bernstein, Prospect Associates, 1801 Rockville Pike, Suite 500, Rockville, Md. 20852.

Lederle Slashes Price of DTP Vaccine in N. Carolina

Lederle Laboratories has eliminated the product liability portion of its price for DTP (diptheria, tetanus, pertussis or whooping cough) vaccine in North Carolina, saving private physicians and their patients more than a million dollars per year.

North Carolina is the first state in the country to establish a Childhood Vaccine Injury Compensation Program, which allows Lederle to eliminate the liability portion of its DTP price. The price has been reduced from $8.92 to $3.67 per dose.

Dr. Seibel Appointed to Selective Service Post

Dr. Robert M. Seibel of Nashville has been appointed as a charter member of the Selective Service System's National Defense Executive Reserve (NDER) Program.

The NDER is a program for recruiting and training experienced business executives and other civilian personnel to serve in key government positions during periods of national emergency.

In his NDER position, Dr. Seibel will serve as a special assistant to the associate director for operations for Health Care Manpower Affairs.

Roster Correction

The ISMA Membership Department has provided the following correction to the 1987-1988 roster:

Dr. Jeffrey E. Salon was listed incorrectly as specializing in Internal Medicine. Dr. Salon recently completed a two-year fellowship in Critical Care Medicine and has returned to Fort Wayne to practice. His office and home listings should be 1325 Sunset Drive, Fort Wayne 46807—(219) 745-5000.

New ISMA Members

William A. Argus, M.D., Bluffton, ophthalmology.

Banipal Hovhanessian, M.D., Kokomo, otolaryngology.

Russell S. Kay, M.D., Lafayette, family practice.

John P. Norris, M.D., Frankfort, obstetrics and gynecology.

Nicholas R. O'Neil, M.D., Lafayette, anesthesiology.

Pravin D. Thakkar, M.D., Frankton, obstetrics and gynecology.

Frederick E. Wideman, M.D., Kokomo, thoracic surgery.

RESIDENTS:

Paul A. Angermeier, M.D., Indianapolis, anatomic and clinical pathology.

James W. Ehlich Jr., M.D., Indianapolis, rheumatology.

Joseph Fraiz, M.D., Indianapolis, infectious diseases.

Kerry M. Keaffaber, M.D., South Bend, family practice.

Vincent A. Keszei, M.D., South Bend, ophthalmology.

Stephen J. Koewler, M.D., Indianapolis, internal medicine.

William E. Marcrum, M.D., Fort Wayne, family practice.

Vincent P. Mathews, M.D., Indianapolis, radiology.

Terrence D. Reagan, M.D., Muncie, family practice.

John R. Roberts Jr., M.D., Indianapolis, family practice.

Stephen T. Rust, M.D., Muncie, internal medicine.

Stephen M. Schultz, M.D., Indianapolis, hematology.

David S. Wilson, M.D., Indianapolis, internal medicine.

Here and There ...

Dr. George L. Plain of South Bend, St. Joseph County health officer, was honored in June by United Health Services and affiliates for helping create the interagency cooperative plan used by UHS.

Dr. Ramon A. Henderson, a Muncie pediatrician, has retired from practice; he is a 1937 graduate of Indiana University School of Medicine.

Dr. Steven M. Yoder of Goshen has been appointed by the City Council to the Goshen Board of Education.

Dr. Sharon P. Andreoli, a pediatric nephrologist at Riley Hospital for Children, Indianapolis, has been awarded a second grant by the Mayflower Fund for Research into Diseases of Children in order to continue pioneering research into endothelial cells in kidneys.

Dr. August Tomusk of Fort Wayne was recently honored as a local pioneer in cardiac surgery at the close of the Midwest Symposium on Heart and Lung Transplantation; the August Tomusk Award was presented to **Dr. Christian Barnard**, who performed the world's first heart transplant on a human being.

Dr. Malcolm O. Scamahorn of Pittsboro received the Distinguished Alumnus Award from the I.U. School of Medicine at its annual Medical Alumni Day festivities May 20.

Dr. Martin J. O'Neill of Valparaiso has been reappointed to the Indiana Medical Licensing Board.

The American Diabetes Association conducted its annual convention in Indianapolis in June, marking the first time a major scientific group has met there, according to **Dr. Charles M. Clark Jr.**, ADA vice-president and director of the Diabetes Research and Training Center, I.U. School of Medicine.

Dr. Steven C. Paschall of Danville has been named a fellow of the American College of Emergency Physicians.

Dr. T. Neal Petry of Delphi has been elected chairman of the board, Indiana Medical History Museum; he also has been elected president of the Indiana Association of Public Health Physicians.

Dr. Mary E. Ade of Lafayette has retired from practice; she is a 1932 graduate of Indiana University School of Medicine.

Dr. John D. Slack, an Indianapolis cardiologist, has been honored for his work in devising a new approach to the rehabilitation of cardiac patients.

Dr. E.C. Kho of Scottsburg, an Army Reserve lieutenant colonel, has received the Army Commendation Medal for his service as a general surgeon at the 5010th U.S. Army Hospital in Louisville.

Dr. Henry Feuer of Indianapolis has been elected secretary-treasurer of the Section on Sports Medicine, American Association of Neurological Surgeons.

Dr. Woodrow A. Myers Jr., Indiana state health commissioner, has been elected president of the Association of State and Territorial Health Officials.

Dr. Philip C. Ferguson, a Wabash family physician 17 years, will end his practice there and assume a teaching position Sept. 1 in the Family Practice Residency Program at Methodist Hospital, Indianapolis.

Dr. Charles S. Giffin of Fort Wayne was honored as a charter member of the founders of the American Academy of Facial Plastic and Reconstructive Surgery during the Academy's recent annual meeting in Denver.

Dr. Frank L. Emert Jr. of Vincennes participated in a "Cataracts and Surgery" seminar at the Knox County Senior Services Center in June.

Dr. Patricia Harper of Indianapolis, a specialist in the diagnosis of breast diseases, was guest speaker at a June luncheon sponsored by the Women's Center of Howard Community Hospital.

Dr. Terry W. Marsh of Muncie discussed "Discoid Lupus" during a June meeting of the local chapter of the Lupus Foundation of America.

Dr. Ramon S. Dunkin of Indianapolis discussed oxygen therapy at a recent meeting at Winona Hospital of the Respiratory Health Club.

Dr. Randolph W. Lievertz of Indianapolis discussed osteoporosis in June during a hospital medical staff meeting in Milwaukee; he is the author of "Pharmacology and Pharmacokinetics of Estrogens," published in the May issue of the *American Journal of Obstetrics and Gynecology.*

Dr. Ronald Hamaker of Indianapolis returned in June from Australia where he was guest speaker at meetings of the Otolarnygological Society of Australia and the Royal Australasian College of Surgeons.

Dr. Robert M. Seibel of Nashville discussed arthritis during a recent program held at the Hickory Ridge Senior Citizens Center.

Dr. Francis W. Price Jr. of Indianapolis discussed intraocular lens complications at the recent annual meeting of the American Society of Cataract and Refractive Surgery; he also addressed the World Congress on the Cornea on the complication of epikeratophakia surgery.

Dr. Dean Maglinte of Indianapolis was on the faculty of the Categorical Course on Gastrointestinal Diseases, conducted in Florida recently by the American Roentgen Ray Society.

Dr. Richard D. Zeph of Indianapolis was a guest speaker and panelist at a recent Indianapolis rhinoplasty seminar sponsored by the American Academy of Facial Plastic and Reconstructive Surgery and the I.U. School of Medicine.

Dr. Sterling P. Tignor of Kokomo has been named president-elect of the Indiana chapter, American College of Surgeons.



"When you have my health, you have everything."

NEWS NOTES

Cancer Deaths Increasing Among White Hoosier Men

The incidence of cancer in white male Indiana residents is increasing at a rate that puts Indiana in the top 15 states nationally, a new cancer atlas released by the National Cancer Institute shows.

According to a review of the atlas by the Indiana State Board of Health, cancer among white Indiana men is increasing at the rate of 6.09% every five years—nearly twice the national increase of 3.80% every five years. Only 12 other states had increases higher than Indiana's.

The study examined cancer rates for white men and women on a state-by-state basis from 1950 to 1980. A similar study examining black cancer rates will be released next year.

Indiana's rate for men increased from 151.21 deaths per 100,000 in the 1950s to 169.49 in the 1960s and 191.66 in the 1970s. The national death rates for the same periods were 162.52 in 1950, 174.94 in 1960 and 188.96 in 1970.

Although cancer in Indiana's white male population is increasing, death rates for white Hoosier women are dropping. Survey figures showed a decrease in all cancer deaths here of 1.61% every five years—only slightly less than the national figure, which shows a decline of 1.77%.

Bowen, Koop Support AIDS Education Guide

Two of the nation's top medical officials have praised Indiana for the AIDS school curriculum distributed by the Indiana State Board of Health, the AIDS Advisory Committee was told at its June meeting.

State Health Commissioner Woodrow A. Myers Jr., M.D., announced at the meeting that Surgeon General C. Everett Koop and U.S. Health and Human Services Secretary Otis Bowen had each praised the recently released school guide.

In a letter to Dr. Myers, Dr. Bowen praised the cooperative efforts of the ISBH, Indiana University professor William Yarber, and the Centers for Disease Control in creating the AIDS educational guide. Calling the curriculum "an important educational option for educators and parents," Dr. Bowen commended the ISBH for its initiative and national leadership in the fight against AIDS.

Dr. Koop referred to the publication during an earlier speech to the National School Boards Association concerning AIDS instruction and local involvement. His comments were published in the *Wall Street Journal* May 19.

Volunteer Support Services for Elderly Get Boost

The Robert Wood Johnson Foundation has formed the "Service Credit Banking Program for the Elderly." The program aims to expand volunteer support services for the disabled and for people age 60 and older.

Three community services, in Massachusetts, the District of Columbia and Missouri, will receive $200,000 each for three years.

Volunteer services are extremely important and valuable in any scheme for the support of the elderly. The funds will be used to: (1) conduct market surveys to determine both the need for services and the availability of volunteers; (2) extend marketing efforts to increase the number of program volunteers; and (3) develop the necessary record-keeping of volunteer service credit hours.

GE Markets Electronic Healthcare Claims Service

GE Information Services is making a network service for the electronic collection and distribution of healthcare insurance claims available to physicians, hospitals and insurance companies throughout Indiana. The system will handle Medicaid, Medicare, Blue Shield and Key Health claims.

In cooperation with Blue Cross and Blue Shield of Indiana, GE Information Services has announced statewide marketing of its EMC*EXPRESS™ System, developed to help members of the healthcare industry cope with an increasingly burdensome avalanche of medical claims paperwork.

At the same time, GE says the service will help doctors, hospitals and insurance companies cut their administrative costs.

For more information on the system, call 1-800-433-3683.

Abbott Seeks Approval for AIDS Virus Antigen Test

Abbott Laboratories has applied to the U.S. Food and Drug Administration for approval to market the first diagnostic test to detect AIDS virus (HIV) antigens. Several medical studies indicate AIDS antigen detection will help physicians diagnose and monitor HIV-infected patients, particularly those on anti-viral drug therapies.

Institute Offers Toll-Free Telephone Link to Hospice Services Available Nationwide

Letter to the Editor

HOSPICELINK is the first nationwide toll-free directory of hospice services. The Hospice Education Institute's toll-free line—800-331-1620—is available to both healthcare professionals and members of the public.

In addition to information about hospice services in the caller's hometown, we can offer general information about the principles and practice of hospice care, and informal short-term telephone support. (We do not offer medical advice.)

All HOSPICELINK services are free.

The Hospice Education Institute is an independent, non-profit organization, not affiliated with any one particular hospice, and serving all hospice, health and caring professionals, and the public.—**M.J.M. Galazka, Executive Director, Hospice Education Institute, Essex, Conn.**

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WARNINGS: Dose should be adjusted to patient's needs. Excessive doses or too frequent administration can lead to profound water loss, electrolyte depletion, dehydration, reduction in blood volume and circulatory collapse with the possibility of vascular thrombosis and embolism, particularly in elderly patients
Prevention of hypokalemia requires particular attention in patients receiving digitalis and diuretics for congestive heart failure, hepatic cirrhosis and ascites, states of aldosterone excess with normal renal function, potassium-losing nephropathy, certain diarrheal states, or other states where hypokalemia is thought to represent particular added risk to the patients
In patients with hepatic cirrhosis and ascites, sudden alterations of electrolyte balance may precipitate hepatic encephalopathy and coma. Treatment in such patients is best initiated in the hospital with small doses and careful monitoring of the patient's clinical status and electrolyte balance. Supplemental potassium and/or spironolactone may prevent hypokalemia and metabolic alkalosis in these patients.
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Hyperuricemia may occur. Reversible elevations of the BUN and creatinine may occur, especially with dehydration and in patients with renal insufficiency. Bumex may increase urinary calcium excretion
Possibility of effect on glucose metabolism exists. Periodic determinations of blood sugar should be done, particularly in patients with diabetes or suspected latent diabetes
Patients should be observed regularly for possible occurrence of blood dyscrasias, liver damage or idiosyncratic reactions
Especially in presence of impaired renal function, use of parenterally administered Bumex should be avoided in patients to whom aminoglycoside antibiotics are also being given, except in life-threatening conditions
Drugs with nephrotoxic potential and bumetanide should not be administered simultaneously
Since lithium reduces renal clearance and adds a high risk of lithium toxicity, it should not be given with diuretics
Probenecid should not be administered concurrently with Bumex
Concurrent therapy with indomethacin not recommended
Bumex may potentiate the effects of antihypertensive drugs, necessitating reduction in dosage
Interaction studies in humans have shown no effect on digoxin blood levels
Interaction studies in humans have shown Bumex to have no effect on warfarin metabolism or on plasma prothrombin activity
Pregnancy: Bumex should be given to a pregnant woman only if the potential benefit justifies the potential risk to the fetus
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Pediatric Use. Safety and effectiveness below age 18 not established
ADVERSE REACTIONS: Muscle cramps, dizziness, hypotension, headache and nausea, and encephalopathy (in patients with preexisting liver disease)
Less frequent clinical adverse reactions are weakness, impaired hearing, rash, pruritus, hives, electrocardiogram changes, abdominal pain, arthritic pain, musculoskeletal pain and vomiting
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Laboratory abnormalities reported are hyperuricemia, azotemia, hyperglycemia, increased serum creatinine, hypochloremia, hypokalemia, hyponatremia, and variations in CO_2 content, bicarbonate, phosphorus and calcium. Although manifestations of the pharmacologic action of Bumex, these conditions may become more pronounced by intensive therapy
Diuresis induced by Bumex may also rarely be accompanied by changes in LDH, total serum bilirubin, serum proteins, SGOT, SGPT, alkaline phosphatase, cholesterol, creatinine clearance, deviations in hemoglobin, prothrombin time, hematocrit, platelet counts and differential counts. Increases in urinary glucose and urinary protein have also been seen
DOSAGE AND ADMINISTRATION:
Oral Administration: The usual total daily dosage is 0.5 to 2.0 mg and in most patients is given as a single dose
Parenteral Administration: Administer to patients (IV or IM) with GI absorption problem or who cannot take oral. The usual initial dose is 0.5 to 1 mg given over 1 to 2 minutes. If insufficient response, a second or third dose may be given at 2 to 3 hour intervals up to a maximum of 10 mg a day
HOW SUPPLIED: *Tablets*, 0.5 mg (light green), 1 mg (yellow) and 2 mg (peach), bottles of 100 and 500; Prescription Paks of 30; Tel-E-Dose* cartons of 100. Imprint on tablets: 0.5 mg—ROCHE BUMEX 0.5, 1 mg—ROCHE BUMEX 1, 2 mg— ROCHE BUMEX 2
Ampuls, 2 ml, 0.25 mg/ml, boxes of ten.
Vials, 2 ml, 4 ml and 10 ml, 0.25 mg/ml, boxes of ten

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Nutley, New Jersey 07110



In acute and chronic edema due to CHF

A DIURETIC THAT GIVES YOU PREDICTABLE CONTROL

Bumex®

bumetanide/Roche

0.5-mg, 1-mg and 2-mg scored tablets; 2-ml ampuls and 2-ml, 4-ml and 10-ml vials (0.25 mg/ml)

Please see adjacent page for references and summary of product information.

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